

# An Integral Theory of Cultural Evolution

Toward a New Synthesis of  
Language, Interaction, Thought & Emotion

**Working Draft - 16.0**

By David Eric Larson

December 26, 2021

# Contents

Illustrations

Abbreviations

Abstract

Introduction

## CULTURAL

- 01 Culture & Worldview
- 02 Cultural Cognition of Risk
- 03 Social Cognition & Group Perception
- 04 Social Relational Models

## SOCIAL

- 05 Interpersonal Traits & Personality
- 06 Core Affect & Emotion
- 07 Emotion & Expectation
- 08 Power-Status & Emotion Classification

## PHYSIOLOGICAL

- 09 Neural Underpinnings of Emotion
- 10 Training the Social Engagement System
- 11 Interoception & the Opponent-Control System
- 12 Categorization, Prediction Error & Constructed Emotion
- 13 Neural Darwinism & Learning

## PSYCHOLOGICAL

- 14 Self-Perception, Feelings & Identity
- 15 Symbolic Reference, the Semiotic & Three Tenses

- 16 Emotional Hierarchy & Blending
- 17 Shame & Self-Conscious Emotions
- 18 Becoming Aware of Awareness

#### ACT MODEL

- 19 Semantic Differential & Affect
- 20 Affect Control Theory
- 21 Affect Control Theory & Emotion
- 22 Affect Control Theory & Inference

#### INTEGRAL

- 23 An Integral Perspective
- 24 A Color Theory of Emotion
- 25 Social Structure & Emotion
- 26 Moral Judgment & Emotion
- 27 Development & Emotion
- 28 Sustainability & Cultural Evolution

#### Appendices

#### Glossary

#### Bibliography

## Illustrations

### CULTURAL

Fig. 1.1 — Grid-Group Plural Rationality Theory Model

Fig. **1.2** — Moral Foundations — *Source*: Haidt (2013)

Fig. **1.3** — Four Cluster Moral Foundation Valuation — *Source*: Haidt, Graham & Joseph (2009: 113)

Fig. **1.4** — The Big “Three” Ethics — *Source*: Shweder (1997)

Fig. **1.5** — Unified Cultural Model — *Source*: Bruce (2013: 45, Fig. 3)

Fig. **2.1** — Cultural Cognition of Risk Dimensions — *Source*: Kahan *et al.* (2011)

Fig. **2.2** — Cultural Cognition of Risk Issue Dynamics — *Source*: Kahan *et al.* (2011: 20, Fig. 5)

Fig. **2.3** — Unified Cultural Model adding Cultural Cognition

### SOCIAL

Fig. **3.1** — Stereotype Content Model (SCM) & BIAS — *Source*: adapted from Fiske *et al.* (2007)

Fig. **3.2** — Neural Recruitment in Perspective Differences of Social & Emotional Engagement — *Source*: Schilbach *et al.* (2013: 396, Fig. 1)

Fig. **3.3** — Empathizing & Systemizing & the Five ‘brain types’ — *Source*: Baron-Cohen (2008: 73, Fig. 5.10)

Fig. **3.4** — Unified Cultural Model rotated **90°** counter-clockwise

Fig. **3.5** — Social Self Model adding Stereotype Content Model (SCM) & BIAS

Fig. **4.1** — Four Social Relational Model Manifestations & Features — *Source*: Fiske (1992: 2004b)

Fig. **4.2** — Six Categories of Action Fluxes — *Source*: Favre & Sornette (2015: 7, Table 3)

Fig. **4.3** — RMT Mod Implementations per PRT Bias — *Source*: Favre & Sornette (2016: 14, Table 1)

Fig. **4.4** — Cultural Level Theory Overlaps (rotated cc 90°) — *Source*: modified from Verweij *et al.* (2014: 89, Fig. 1)

Fig. **4.5** — Social Self Model adding Relational Models

Fig. **5.1** — Diagrammatic Representation of Hierarchical Organization of Personality — *Source*: Eysenck (1998: 29, Fig. 2)



**Fig. 5.2** — The Five Factor Model of Personality & Interpersonal Circumplex Model — *Source*: Trapnell & Wiggins (1990: 782, Fig. 1)

**Fig. 5.3** — Universal Dimensions of Social Person Traits Agency & Communion — *Source*: Abele & Wojciszke (2007; 2013)

**Fig. 5.4** — Interpersonal Circumplex w/ Big 5's Interpersonal Domains & Aspects — *Source*: DeYoung, Weisberg, Quilty, & Peterson (2012: 466, Fig. 1)

**Fig. 5.5** — Isomorphic Transformation of IPC w/ Big 5's Interpersonal Domains & Aspects — *Source*: DeYoung, Weisberg, Quilty, & Peterson (2012: 466, Fig. 1)

**Fig. 5.6** — Three Important Circumplex Trait Structures of Big Five Pairings — *Source*: excerpted from Hofstee, de Raad, & Goldberg (1992: 149-153, Fig. 1)

**Fig. 5.7** — Probability Plots of Items of three CQ Circumplex — *Source*: Gurtman (1997: 88, Fig. 4)

**Fig. 5.8** — Social Self Model adding Interpersonal Traits & Aspects

**Fig. 6.1** — Extraversion (I) & Neuroticism (IV) Circumplex Trait Structure — *Source*: Hofstee, de Raad, & Goldberg (1992: 149-153, Fig. 1)

**Fig. 6.2** — Core Affect Circumplex — *Source*: Barrett & Russell (1999: 11, Fig. 2)

**Fig. 6.3** — Primary & Blended Psychological Emotions — *Source*: Plutchik (2001: 349, Fig. 6)

**Fig. 7.1** — ITPRA Model of Musical Expectation — *Source*: Huron (2011: 17, Fig. 1.1)

**Fig. 8.1** — The OCC Model of Emotion Categories — *Source*: Ortony & Clore (2006: 309, Fig. 13.1)

**Fig. 8.2** — Expectations & Sanctions of Self & Other — *Source*: Thamm (2004: 196)

**Fig. 8.3** — Power & Status - Actions & Sanctions — *Source*: Thamm (2004: 198-199)

**Fig. 8.4** — The Emotion Social-action System — *Source*: Thamm (1992: 655, Fig. 2)

**Fig. 8.5** — Power & Status Theory of Emotion Categories of Power Advantage — *Sources*: Thamm (2004, 2006)

**Fig. 8.6** — Power Disadvantage Subtle Emotion Balance Diagrams — *Sources*: Thamm (2004); Ortony, Clore & Collins (1990)

**Fig. 8.7** — Social Self Model adding Power & Status

## PHYSIOLOGICAL

**Fig. 9.1** — Hierarchical Organization of Endocrine & Autonomic Processes — *Source*: Porges & Carter (2012: 16, Fig. 2)

**Fig. 9.2** — The Fight, Flight, Immobilize Stress Response — *Source*: Kravits (2008: 119, Fig. 6.6)

**Fig. 9.3** — Intrinsic Motive Formation (IMF) assembly guidance system of movement — *Source*: Trevarthen & Aitken (1994: 119, Fig. 7.2)

**Fig. 9.4** — Channels of Affect in the Periaqueductal Gray (PAG) — *Source*: Panksepp & Trevarthen (2008: 118, Fig. 7.1)

**Fig. 9.5** — Nested BrainMind Hierarchies — *Source*: Panksepp *et al.* (2010: 119, Fig. 7.2)

**Fig. 9.6** — Intrinsic-Extrinsic Motivation Dimensions & Neural Systems — *Source*: Cromwell *et al.* (2020: 207, Fig. 2)

**Fig. 9.7** — Levels of 3 Main Monoamine Neurotransmitters Associated with 3-Dimensions of Affect — *Source*: Lövheim (2012: 343, Table 2)

**Fig. 9.8** — Emotion Motivation Theories Response Matrix — *Sources*: Kemper (1987); Tops *et al.* (2010) ; Cromwell *et al.* (2020); Porges (2007)

**Fig. 9.9** — Social Self Model adding Polyvagal Subsystems & Threat Defenses

**Fig. 10.1** — Allan Schore Roots of Empathy Talk <https://youtu.be/cosKY86Qmzo> — *Source*: Schore (2016)

**Fig. 10.2** — Hemispheric Brain Growth Cycles — *Source*: Schore (2003: 74, Fig. 4.1)

**Fig. 10.3** — Autonomic Nervous System Arousal — *Source*: Schore (2009: 121, Fig. 5.1)

**Fig. 11.1** — The Interoceptive Network of the Lamina I spino-thalamic pathway — *Source*: Craig (2008: 275, Fig. 16.1)

**Fig. 11.2** — Primate Homostatic Afferent System — *Source*: Craig (2003: 501, Fig. 1)

**Fig. 11.3** — Somatosensory-Affective Pain Neurophysiology — *Source*: Decety & Lamm (2009: 946, Fig. 48.1)

**Fig. 11.4** — Salience Network Dynamic Mediation Between Networks — *Source*: Menon (2015: 605, Fig. 11)

**Fig. 11.5** — Brain Regions involved in Emotions & Motivation — *Source*: Cromwell *et al.* (2020: 207, Fig. 1)

**Fig. 12.1** — Depicting the Conceptualization of Core Affect — *Source*: Barrett (2011: 365, Fig. 2)

**Fig. 12.2** — Neural Components of Emotion Processing — *Source*: Ochsner & Barrett (2001: 66)

**Fig. 12.3** — Intra-cortical Architecture & Inter-cortical Connectivity for Predictive Coding — *Source*: Barrett & Simmons (2015: 2, Fig. 1)

Fig. **13.1** — Logical Typing of Learning — *Source*: Dilts (2014: 5)

## PSYCHOLOGICAL

Fig. **14.1** — Heuristic Toolbox over Social & Non-Social Inputs Isomorphic Transformation — *Source*: Hertwig & Hoffrage (2013: 29, Fig. 1.1)

Fig. **14.2** — Perceptual Control Model — *Source*: Powers *et al.* (2011: 2, Fig. 1)

Fig. **15.1** — Peirce's 9-part Sign Taxonomy — *Source*: Deacon (2012: 16, Fig. 2.2)

Fig. **15.2** — Distribution of Categories in Semiosis — *Source*: Everaert-Desmedt (2011)

Fig. **15.3** — Semiotic Self Structure — *Sources*: compiled from Habermas (1979); Wiley (1995); Schlicht *et al.* (2009); Damasio (2010); Everaert-Desmedt (2011)

Fig. **15.4** — Ontological Symbolic Levels & the Semiotic Self — *Source*: Wiley (1995: 158-159, Table 7.1 & 7.2)

Fig. **16.1** — Bengkulu Shame-like & Pride-like Dual Logics — *Source*: Fessler (1999)

Fig. **16.2** — First & Second Order Evaluative Emotions — *Source*: Fessler (1999)

Fig. **16.3** — First Order Subtle Emotions in PSToE Notation — *Sources*: Fessler (1999); Thamm (2004)

Fig. **17.1** — Shame & Guilt Experiences — *Source*: Lewis (1971)

Fig. **17.2** — Brené Brown Tedx Talk <https://youtu.be/iCvmsMzIF7o> — *Source*: Brown (2010)

Fig. **18.1** — Three Main Types of Joint Attention Emergence — *Source*: Tomasello (1999: 65, Fig. 3.1)

## ACT MODEL

Fig. **19.1** — Berlin-Kay hierarchy of basic color terms — *Source*: Davies & Corbett (1994: 67, Fig. 1)

Fig. **19.2** — Semantic Differential Bi-Polar Rating Scales — *Source*: Schneider & Heise (1995: 4, Fig. 1)

Fig. **19.3** — Social Self Model adding Semantic Differential

Fig. **20.1** — Affect Control Theory Propositions — *Source*: MacKinnon (1994)

Fig. **20.2** — Affect Control Theory Action Frame — *Source*: Heise (2006)

Fig. **20.3** — Affect Control Theory EPA Values over Several Actions — *Source*: Schneider & Heise

(1995: 11-12, Table 1 & 2)

Fig. **21.1** — EPA Emotion Visualizations — *Source*: Lively & Heise (2014: 60, Fig. 4.2)

Fig. **22.1** — ACT Social Inference Models — *Source*: compiled from Lively & Heise (2014)

Fig. **22.2** — Correction Model of Social Inference — *Source*: Molden *et al.* (2006: 740, Fig. 1)

Fig. **22.3** — Entity versus Incremental Lay Theories — *Source*: Molden & Dweck (2006)

Fig. **22.4** — Social Intuitionist Model — *Source*: Haidt (2001: 815, Fig. 2)

## INTEGRAL

Fig. **23.1** — Integral Theory Quadrant map — *Source*: DailyEvolver.com

Fig. **23.2** — Integral Theory Person Perspectives — *Source*: IntegralAcademy.eu

Fig. **23.3** — Integral Theory Quadrant Levels — *Source*: IntegralLife.com

Fig. **23.4** — The 5 Options of Conflict Resolution (Isomorphism) — *Source*: kilmanndiagnostics.com

Fig. **23.5** — IToCE Theories map

Fig. **23.6** — IToCE Social Self Levels Model

Fig. **23.7** — Social Integration — *Source*: Scheff (1997: 100, Fig. 4)

Fig. **23.8** — Pragmatic Paradigm in SSR Methodology — *Source*: Morgan (2007: 71, Table 1)

Fig. **24.1** — Modes of Autonomic Control — *Source*: Berntson, Cacioppo, & Quigley (1991: 463, Table 1)

Fig. **24.2** — Modes of Autonomic Control & Emotion Cells — *Sources*: Berntson, Cacioppo, & Quigley (1991: 461-462); Plutchik (2001); Porges (2001, 2007)

Fig. **24.3** — Modes of Evaluative Activation & Attitudinal Properties — *Source*: Cacioppo & Berntson (1994: 417)

Fig. **24.4** — ANS 2-D Co-Activation Space w/ Modes — *Source*: Berntson, Cacioppo, & Quigley (1991: 463, Table 1)

Fig. **24.5** — Bivariate Evaluative Plane w/ Modes — *Source*: Cacioppo & Berntson (1994: 402, Fig. 1)

Fig. **24.6** — Semantic EPA Octants locating Sensation, Motivation, Perception — *Source*: graph image Weisstein (2020)

Fig. **24.7** — The Primary Emotional Operating Systems — *Source*: Panksepp (1998: 53, Fig. 3.5)

Fig. **24.8** — Modes of Autonomic Control Social Self Mapping

Fig. **24.9** — Modes of Autonomic Control Social Self Mapping & Semantic Personality Traits

Fig. **25.1** — Plutchik's 1962 Emotion Wheel — *Sources*: Tenhouten (2007: 19, Fig. 2.4); Plutchik (1962/1991: 111, Fig. 1)

Fig. **25.2** — Plutchik Primary, Secondary & Tertiary Dyads — *Sources*: Tenhouten (2007); ChaoticBrain (2019)

Fig. **25.3** — Primary E/S Emotion Blending

Fig. **25.4** — Primary E/S Emotion Taxonomy

Fig. **25.5** — Prediction & Motivational ANS Activation Levels

Fig. **25.6a** — Moral Conflict & Consensus Subtle Structural Emotions (Thamm) — *Sources*: Thamm (2004, 2006); Haidt (2003)

Fig. **25.6b** — Moral Conflict & Consensus Subtle Structural Emotions (Fessler) — *Sources*: Fessler (1999); Haidt (2003)

Fig. **25.7** — Self-Conscious Subtle Emotion Categories — *Sources*: Thamm (1992, 2004, 2006)

Fig. **25.8** — Status Disadvantage Syndrome integrating Structure, Appraisal & ANS adjustment

Fig. **25.9** — PSToE Structural Emotion Syndromes — *Sources*: Thamm (2004, 2006)

Fig. **25.10** — PSToE Reversing Status Relations — *Sources*: Thamm (2004, 2006)

Fig. **26.1** — The Model of Moral Motives — *Source*: Janoff-Bulman & Carnes (2013: 3, Fig. 1)

Fig. **26.2** — The Model of Moral Motives with MFT — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113)

Fig. **26.3** — The Model of Moral Motives with MFT (vertical) — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113)

Fig. **26.4** — Model of Moral Motives & MFT Cluster Heat Maps — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113)

Fig. **26.5** — The Model of Moral Motives & MFT w/ MAC — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113); Curry (2016)

Fig. **26.6** — Morality-As-Cooperation Moral Molecules — *Source*: Curry, Alfano, Brandt, & Pelican (2021: 7, Table 2)

Fig. **26.7** — Schwartz Value Theory Circumplex & Isomorphism — *Source*: Schwartz (2012: 9, Fig. 1)

Fig. **26.8** — Schwartz Value Theory Quadrants — *Source*: modified from Schwartz (2012: 13, Fig. 2)

Fig. **26.9** — Schwartz Theory of Basic Values — *Source*: Schwartz (2012: 5-7)

Fig. **26.10** — Schwartz Value Theory Motivational Continuum — *Source*: Schwartz (2012: 9-10)

Fig. **26.11** — The Model of Moral Motives & MFT MAC w/ SVT — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Iyer *et al.* (2012); Curry (2016); Schwartz (2012)

Fig. **26.12** — Model of Moral Motives & MFT MAC SVT w/ BUC(K)ET — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113); Curry (2016); Schwartz (2012); Fiske (2004)

Fig. **26.13** — RMT Manifestations & Features adding Motivations — *Sources*: Fiske (1992: 694-696; 2004b); Rai & Fiske (2011)

Fig. **26.14** — Model of Moral Motives & MFT MAC SVT BUC(K)ET w/ RMT Action Fluxes — *Sources*: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113); Schwartz (2012); Fiske (2004); Curry (2016); Rai & Fiske (2011); Favre & Sornette (2015: 7, Table 3)

Fig. **26.15** — PRT Configuration of Model of Moral Motives Cluster Heatmaps — *Sources*: Haidt, Graham & Joseph (2009: 113); Bruce (2013)

Fig. **26.16** — Social Self Mapping with Autonomic Modes. Semantic Personality Traits & SVT Motivational Continua

Fig. **27.1** — Stages of Moral Development — *Source*: Kohlberg (1981)

Fig. **27.2** — Categories in Semiosis, Perspective Focus & Brain System Recruitment

Fig. **27.3** — Early Stages of Self Other Awareness — *Source*: Trevarthen *et al.* (2006: 67, Fig. 2.2)

Fig. **27.4** — RMT Manifestations & Features w/ Motivations adding Emotion Theories — *Sources*: Fiske (1992: 694-696; 2004b)

Fig. **27.5** — Relational Channels & Variables of Socialization — *Source*: Kemper (1978: 271)

Fig. **27.6** — Preconventional Reciprocal Action Orientations w/ PSToE Conflict & Consensus Structures — *Sources*: Habermas (1990: 148), Thamm (2004; 2007)

Fig. **27.7** — Preconventional Reciprocal Action Orientations w/ PSToE Comparison Emotion Categories — *Sources*: Habermas (1990: 148), Thamm (2004, 2007)

Fig. **28.1** — Core Principles for Management of Common-Pool Resources (CPR) — *Source*: Ostrom (1990)

Fig. **28.2** — Spiral Dynamics Levels — *Source*: Beck & Cowan (2006)

**Fig. 28.3** — Spiral Dynamics & Moral Motivations

## Abbreviations

**ACC** — anterior Cingulate Cortex

**ACES** — Adverse Childhood Experiences

**ACT** — Acceptance and Commitment Therapy

**ACT** — Affect Control Theory

**AMY** — Amygdala

**ANS** — Autonomic Nervous System

**AQAL** — All Quadrants All Levels

**AR** — Authority Ranking

**ASC** — Autism Spectrum Condition

**BAS** — Behavioral Activation System

**BIAS** — Behavior from Intergroup Affect and Stereotypes

**BIS** — Behavioral Inhibition System

**CAB** — Cardiac Autonomic Balance

**CAD** — Contempt (C), Anger (A), Disgust (D). See *CAD Hypothesis*

**CAM** — Conceptual Act Model

**CAR** — Cardiac Autonomic Regulation

**CCR** — Cultural Cognition of Risk

**CEN** — Central Executive Network

**CNS** — Central Nervous System

**CP** — Categorical Perception

**CS** — Communal Sharing



**CTE** — Constructed Theory of Emotion

**DMN** — Default Mode Network

**DVC** — Dorsal Vagal Complex

**E-S** — Expectations-Sanctions Paradigm Model

**ECT** — Evolutionary-Coalitional Theory

**EDD** — Eye Direction Detector

**EEA** — Environment of Evolutionary Adaptedness

**EEG** — Electroencephalographic

**ELS** — Early Life Stress

**EM** — Equality Matching

**EMB** — Extreme Male Brain

**EMT** — Error Management Theory

**EPA** — Evaluation (E), Potency (P), Activation (A). See *Semantic Differential*

**ESA** — Emotional Self-Alienation

**FFFS** — Fight-Flight-Freeze System

**HRV** — Heart Rate Variability

**HPA** — Hypothalmo-Pituitary Adrenal

**HVIC** — Horizontal and Vertical Individualism and Collectivism

**IToCE** — Integral Theory of Cultural Evolution

**ITPRA** — Imagination, Tension, Prediction, Reaction, Appraisal

**MFT** — Moral Foundations Theory

**MNS** — Mirror Neuron System

**MP** — Market Pricing

**NACC** — Nucleus Accumbens

**NGS** — Neuronal Group Selection

**OCC** — Ortony, Clore & Collins Emotion Model

**OFC** — Orbitofrontal Cortex

**PAG** — Periaqueductal Gray

**PARCS** — Predictive And Reactive Control Systems

**PCC** — Posterior Cingulate Cortex

**PFC** — Prefrontal Cortex

**PNS** — Parasympathetic Nervous System

**PP** — Predictive Processing

**PRT** — Plural Rationality Theory

**PSToE** — Power Status Theory of Emotion

**rAIC** — right Anterior Insular Cortex

**ROI** — Representamen, Object, and Interpretant

**RSA** — Respiratory Sinus Arrhythmia

**RWA** — Right Wing Authoritarianism

**SAM** — Shared Attention Mechanism

**SCE** — Self-Conscious Emotion

**SCM** — Stereotype Content Model

**SD** — Semantic Differential

**SDO** — Social Dominance Orientation

**SES** — Social Engagement System

**SNS** — Sympathetic Nervous System

**SI** — Symbolic Interactionism

**SIM** — Social Intuitionist Model

**SN** — Salience Network

**SPT** — Self-Perception Theory

**STS** — Superior Temporal Succulus

**SVS** — Schwartz Value Survey

**SVT** — Schwartz Value Theory

**TCA** — Theory of Communicative Action

**TCE** — Theory of Constructed Emotion

**TL** — Tightness-Looseness Theory

**TMS** — Transcranial Magnetic Stimulation

**TPD** — Theory of Positive Disintegration

**TPJ** — Temporoparietal Junction

**VTA** — Ventral Tegmental Area

**VVC** — Ventral Vagal Complex

**WMC** — Working Memory Capacity

**WEIRD** — Western, Educated, Industrialized, Rich, & Democratic

## **Abstract**

In this paper I attempt to demonstrate that Affect Control Theory (ACT) provides a robust theoretical framework for a complete theory of Human Cultural Evolution. I posit that Affect Control Theory explains the actual mechanism of the human cultural engine when viewed from an Integral perspective; that is, when viewed from perspectives across biological and social scientific theories. By orienting analytic models from across many different disciplines, the functioning of human social interaction can be seen to interact from Subjective, Objective, Individual and Collective perspectives. Weaving together these four perspectives shows how human social interaction functions in the Psychological, Biological, Cultural and Social domains. This Integral perspective of human social interaction posits a plausible explanation for the emergence of culture, yields important insights into human personal and group evolution, provides a roadmap for human evolutionary growth and development, and diminishes the division between the emotional and the cognitive.

Integral Theory provides a methodological framework for organizing epistemological knowledge into a systematized framework by aligning disciplines across a cartesian graph created by the intersection of Individual-Collective and Interior-Exterior perspectives. Integral Theory's methodology can be modified to model the human evolutionary system by mapping the analytic models from a variety of social and biological sciences spanning different epistemological levels. Each discipline's analytic produces a pattern, which when compared with other analytics, reveals a deep underlying commonality. These can be transformed and aligned to reveal a patterning of patterns related to an underlying morphological structure at the intersection of language, interaction, thought, and emotion. These aligned patterns create a higher order of information which can help to envision a deeper understanding both across and between epistemological levels.

From the collected integration of Cultural, Social, Interpersonal, Psychological, and Neurophysiological perspectives and the development of integral theories, a new synthesis can be made to provide the following:

1. Compilation of a Social Self Model aligning theoretical analytics across different disciplines in the Social, Behavioral, and Biological sciences along two universal dimensions. (CH 1-18)

2. Integration of micro macro theory of levels with the Social Self Model. (CH 23)
3. Identification of Affect Control Theory's mathematized model as the framework to test a multi-level analytic of the Social Self Model (CH 19-22)
4. A Universal Theory of Emotion uniting constructionist and nativist theories of emotion across various disciplines related to fuzzy categorization of autonomic modes of control. (CH 24)
5. Location of the EPA affective dimensions in the functional space of the autonomic nervous system composed from Emotion, Motivation, and Perception functional system subspaces. (CH 24)
6. Integration of the primary autonomic emotion modes with the Social Self Model and identification of the biopsychological universal dimensions. (CH 24)
7. Decoding of an Emotion Taxonomy from the structural dimensions of Power and Status Theory of Emotion in relation to the modes of Autonomic control. (CH 25)
8. Construction of a universal model of moral motivations which integrates with Moral Foundations Theory, Schwartz Value Theory, Morality-as-Cooperation, BUC(K)ET, Relational Models Theory and Plural Rationality Theory (Group-Grid). (CH 26)
9. A new understanding of Spiral Dynamics' ~MEMEs differentiated by prototype Moral Motivations rather than person perspective. (CH 28)
10. A theoretical framework that offers multiple multi-level (macro-to-micro) analytics for confirming the validity of Integral Theory.

**Keywords: Affect Control Theory, Cultural Evolution, Integral Theory, Emotion Theory, Power Status Theory, Salience Network, Morality, Motivation, Interoception, Categorization, Semiotics, Pragmatism, Reciprocity, Theory of Levels, Spiral Dynamics, Heart Rate Variability, Vagal Regulation**

## Introduction

*“It is a narrow mind which cannot look at a subject from various points of view.” George Eliot, Middlemarch*

The parable of the Blind men and the Elephant, a story passed down across millennia from the ancient wisdom tradition of the Indian subcontinent, has often been used to explain how basic reality can be perceived or described in vastly different terms by people directly observing some common phenomenon. In that story, a group of blind men happen upon an elephant for the first time in their lives. Surrounding the elephant, they each reach out and feel the elephant, but their experience and descriptions wildly diverge from one another.

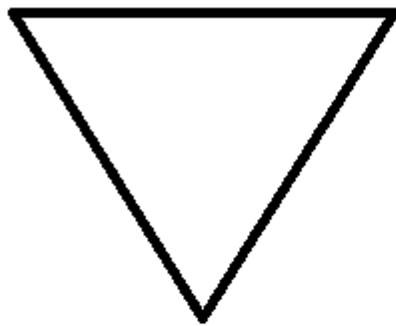
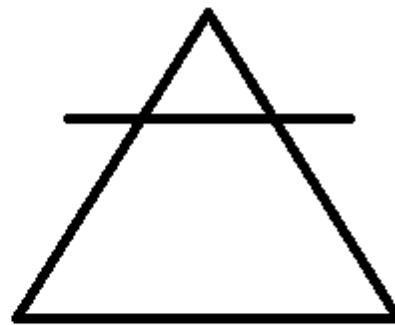
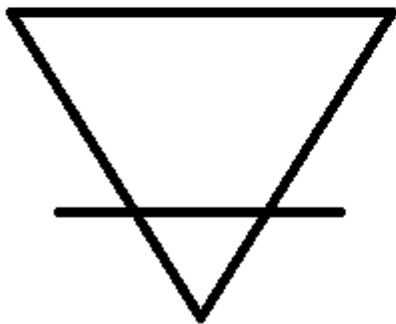
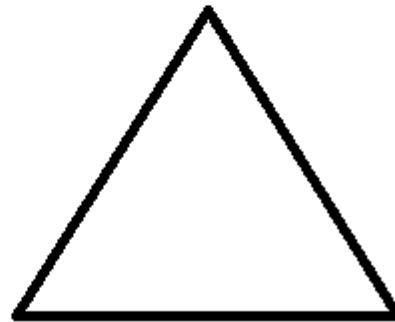
One man feels the elephant’s side, describing it as sturdy like a wall. A second man feels the elephant’s smoothly long and sharp tusk and describes it as like a spear. A third feels the elephant’s trunk, describing it as coiled and long like a snake. Another feel the elephant’s wrinkled knee, describing it as thick and round like a tree. A fifth feels the elephant’s large, floppy ear, describing it as like a fan. The last man feels the elephant’s tail, describing it as like a rope. Each argues with the others, and they come to blows with each insisting they are certain what they experienced represented the real truth of an elephant.

This parable is oft cited within the sciences, serving as a metaphor for how subjective experience of the world, or perhaps methodologically different ways of measurement, may result in vastly different explanations or models of the same phenomena. Oftentimes, our direct subjective perception of the world differs from others, which triggers an instinct to defend our experiential reality as true, while casting others’ as false. Even the great debates within academia between rival theories regarding the reality of some particular phenomenon, each producing supporting empirical evidence but oppositely drawn conclusions, can be fought tooth-and-nail over which framework best describes reality. However, many theoretical debates result from differences in perspective, seeing the world or measuring a phenomena from different ontological levels, of which the collective human mind has great capability as evidenced by the tremendous diversity of interdisciplinary fields of study.

However, there are regularities in how we differently see the world. Curiously, these regularities

often have a pattern of difference resembling other patterns of difference across different levels in which humans perceive, experience, feel, and name the world. That resemblance of pattern of differences appears in various analytic models produced to support scientific theories, showing the variance of humans according to some salient aspect of a phenomena. Quite usually, this pattern emerges from measuring the co-variance of two independent variables, which when compared together produce a pattern of four distinct types. The basic form of such an analytic is the simple Cartesian graph, which on one axis shows the spectrum of variance of one variable, while on a perpendicular axis, the variance of the other variable. This divides the analytic space into four quadrant regions, representing a taxonomy of four recognizable ways in which these two phenomena relate.

An early typology of the ancient western world having this pattern of four helped to explain the basic building blocks from which reality emerged through the interaction of Earth, Air, Water, and Fire. These primordial types served as symbolic archetypes, from which complex phenomena could be understood as constructions using simpler forms. The elements of Earth, Air, Water, and Fire were symbolically represented by transformations of some archetypal form or object, of which each element's symbol iconically matched an aspect of reality which set it apart, and in relation to, the other basic types.

**WATER****AIR****EARTH****FIRE**

The Western Ancient Elements (Wikipedia)

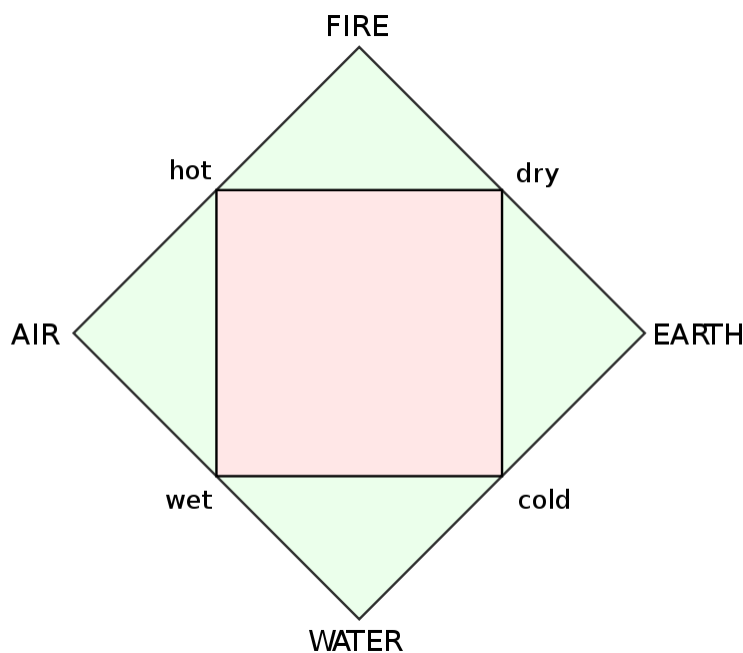
The ancient greek word stoicheion (στοιχείον), originally meaning the series of marks the shadow the gnomon (etymology: *the interpreter*) of a sundial traverses to measure the time of day, gradually transformed in meaning to generally describe a series, the component parts, or the elements from which some larger phenomena was composed (<https://en.wiktionary.org/wiki/στοιχείον>). The greeks used stoicheion as a general categorical term, not only to describe the ancient physical elements, but also to describe elements of knowledge across the important fields of their early sciences: the first sounds used in spoken language (Phonology); the elemental parts of speech (Grammar); the basic units of math (Arithmetic); the points and lines used to draw shapes (Geometry); the major premises of a syllogism (Logic and Reason).

Two millennia passed until the European middle ages, when the rediscovery by the Western world of



the Ancient Greek sciences and philosophy brought about the European Renaissance through reestablished trade and export of knowledge with Arabic cultures whom kept alive ancient Greek scholarship during the European dark ages. European and Arabic learned men vigorously attempted to understand their current reality through experimentation, which saw the development of laboratory techniques and the scientific method. However, the antiquarian stoicheion of elements was still used as the model of the basic building blocks of reality. Their pursuits in Alchemy (etymology: *to tear apart*) was an attempt to find ways to purify materials into the basic elements.

The European discovery of Aristotelian texts added to the elements four basic qualities, which represented two equal and opposite, yet complementary, pairs of forces or characteristics which described the interaction and transformation of the ancient elements. Hot and Cold were seen as an active force driving change, while Wet and Dry were seen as passive forces produced by the active force. Modern traditions have since connected the Chinese concepts of Yang to cross combinations of Hot and Dry and Yin to Cold and Wet. Thus, the Ancient elements could be seen as Fire being composed of Hot + Dry, Air of Wet + Hot, Water of Cold + Wet, while Earth of Dry + Cold. These shared qualities brought the elements into relation, which influenced experimental alchemic methods.



The Systematized Elements of Alchemy (Wikipedia)

Several centuries later, after real successes in developing the early sciences of the Renaissance, the pursuit of Alchemy continued as esoteric, magical, and spiritual practices in hopes of resurrecting some ancient wisdom forgotten over the ages. These esoteric pursuits greatly affected both the arts and literature of the time, which included works containing cryptic mysticism and symbolism. Yet, the tradition occurred outside of the empirical sciences, which continued to methodically *tear apart* phenomena into theorized constituent parts and to use the scientific method to rule out failed hypothesis and reinforce supported hypothesis.

In the early 20<sup>th</sup> century, Sigmund Freud was integrating the pre-Socratic Greek philosophy of Empedocles, who theorized the ancient western elements changed through the action of only two forces that were seen as equal and opposite. These two forces were envisioned as to equal to Love, which bound together the basic elements; and Strife, which disintegrated the whole into its constituent parts, which Freud recast as Eros and Thanos (Kemper, 2007). Later in the mid-twentieth century, empirical techniques uncovered two forces resembling these two archetypes as the primary dimensions underlying the social world, which surprisingly appeared in the analytics of many other theories within the Social Sciences (Kemper, 2007).

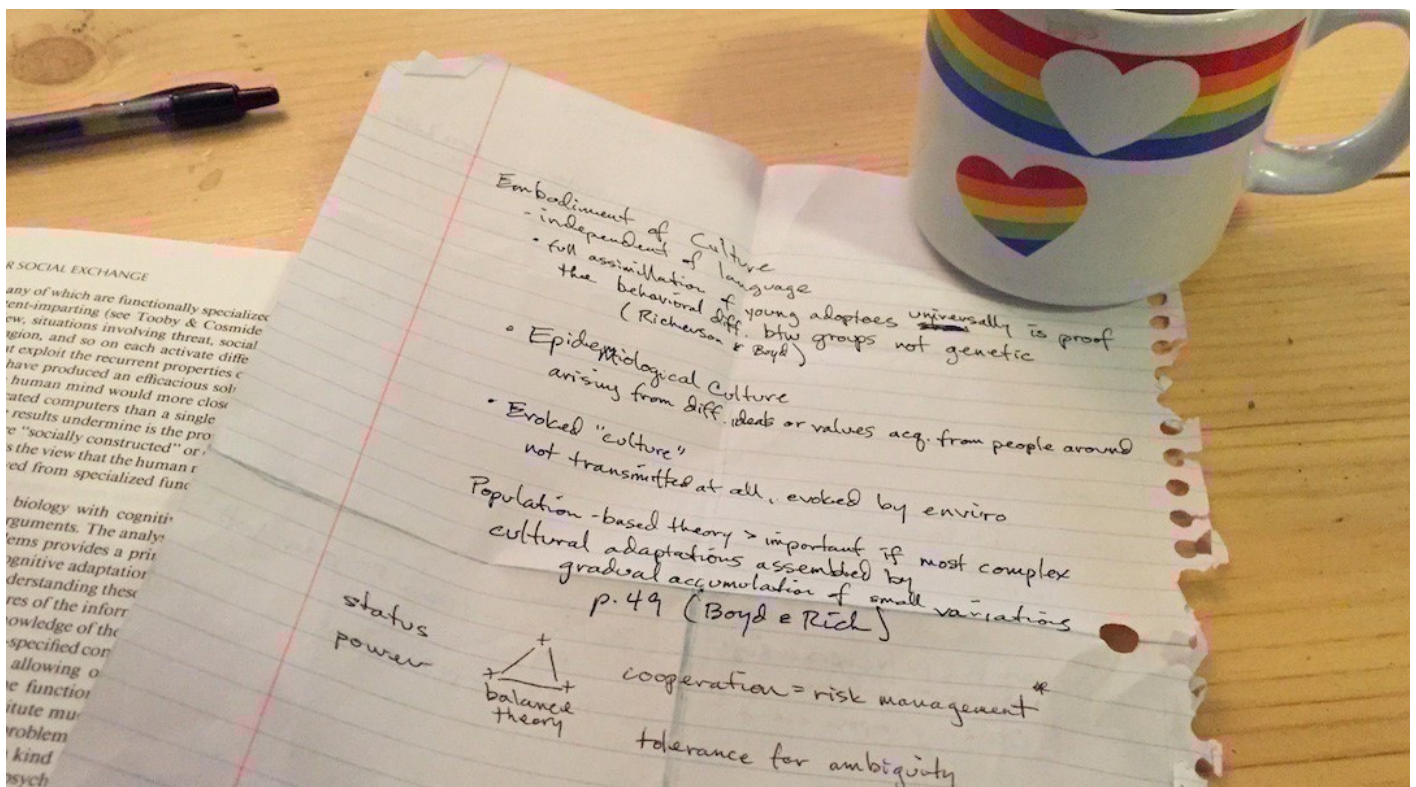
The resounding success in the Physical Sciences to discover the ultimate building blocks of matter using reductionist methodologies, confirming very accurate predictions, such as the measure of the energy of the electron, greatly influenced the Social Sciences to adopt similar reductionist methodologies which soon dominated research. Yet other methodological perspectives within the Social Sciences persisted, and since the cognitive revolution, have come into conflict with those newer perspectives, causing great conflict between competing theories of reality within and between endeavors in the Physical Sciences, Social Sciences, Arts & Humanities, and Philosophy.

The analytics in the Social Sciences often measure the variation of different aspects human interaction from different levels over two co-varying dimensions, producing typologies which have similar family resemblances. But human interaction is different than atomic particle interaction, and “the map is not the territory” and “the word is not the thing” (Korzybski, 1933), and these typologies aren’t reality, but models of reality, or re-presentations of reality (Bateson, 1972). The parts they dissemble from the whole of some phenomena co-varying across two dimensions are difficult to measure exactly, yet their distinct patterning intrigues. And the stoicheion used to describe the

constituent parts of that phenomena becomes reified and taken to be real. These typologies, then, become generalized and recurrent, generating whole folk logics in which to understand the world. And yet, the resemblances between these different typologies of parts of wholes signify something important. By aligning the knowledge from across many of these analytics, comparing the parts of wholes at one level to the parts of wholes at others, and linking fact-based theory across disciplines and levels, a common groundwork of explanation can be made to show Consilience, or the unity underlying the Biological and Social Sciences.

What is now needed is an integration of the knowledge from across these different perspectives and levels to encompass both bottom up and top down methodologies. An integration which can explain the 'correlations' across and between levels of study, which can explain the 'correlation' among the parts and the wholes, and which can uncover a hidden unity.

This study is one such attempt.



# CHAPTER ONE

## Culture & Worldview

*“Any theory that hopes to explain the behavior of contemporary humans must tell us what it is that causes humans to be so much more variable than any other species and why this peculiar capacity for variation was favored by natural selection.” Richerson & Boyd (2005: 57)*

It is well known that human beings differ from the rest of the living world in our ability to coordinate living via a transmitted culture representing a vast storage of knowledge accumulated and transmitted over many generations. Such knowledge allows human groups to adapt and thrive in virtually every environment on earth over hundreds of thousands of years of cultural exchange. The general explanations of how humans evolved involve descriptions of the development of tools, speech, art, agriculture, and so on. However, theoretical accounts vary across multiple disciplines to tease apart the influences across mediums of cultural exchange in language, interaction, thought and emotion to enable humanity’s uniquely varied forms of cultural transmission, and ultimately, how we come to collectively understand the world through meaning.

These disciplines array across different ontological levels with unique fundamental perspectives (e.g., collective versus individual, internal versus external) having unique vantage points from which to observe, assess, and name these influences, presumably to assess causation and ultimately the constraints that guided human adaptations. From the time of Plato and Aristotle onward, thinkers have outlined a hierarchy of Ontological levels to describe the structure of reality, which this study will generally call the cultural, social, interpersonal, psychological and neurophysiological levels from which a uniquely human system has somehow emerged and differentiated itself from the rest of the living world. This study will examine evidence from a selection theories across these levels to assess the possibility of a new synthesis embedded in human neurophysiology, beginning with the topmost (Wiley, 1996), the cultural.

The definition of culture varies across disciplines, but as noted by Mesoudi *et al.* (2006), Boyd & Richerson (2001) provide a succinct definition of culture as “information capable of affecting individuals’ behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission,” (Mesoudi *et al.*, 2006: 331). We recognize the information exchanged through language as that which sets humans apart from other animals, allowing the nuanced ability to express internal thoughts and states, coordinate interaction between of our selves and others. However, information can also be exchanged through non-verbal communication: through a wink and a nod, imitation, embrace, mimicry, and many other forms less precise but sometimes more insightful than simply verbal forms. Both verbal and non-verbal forms of communication represent attempts to share something internally thought and felt with another, which at it’s core is an effort to be understood (Habermas, 1990).

While much of our behavior is formed and guided by socially exchanged information, other behavior, especially that which keeps us from social connection, is in fact not learned (non-cultural), but innate. Evolutionary biologists Cosmides & Tooby (1992a) argue that what is often labeled as epidemiological (learned) cultural behavior is in fact behavior “evoked” by environmental cues and processed by innate psychological mechanisms evolved to solve common problems faced by humans over the vast history of human evolution common to humans of all cultures and groups (Cosmides & Tooby, 1992a: 211). Richerson & Boyd (2005) counter, however, that much behavior is not “evoked” but acquired through social transmission, and that it gradually accumulates via small variations over time (Cosmides & Tooby, 1992a: 44, 49-51). Thus, a comprehensive theory of cultural evolution must distinguish between cultural behavior learned via transmission versus innate mechanisms evoked by environmental cues, and also, must explain how epidemiological culture manifests out of our innate biology and changes over time.

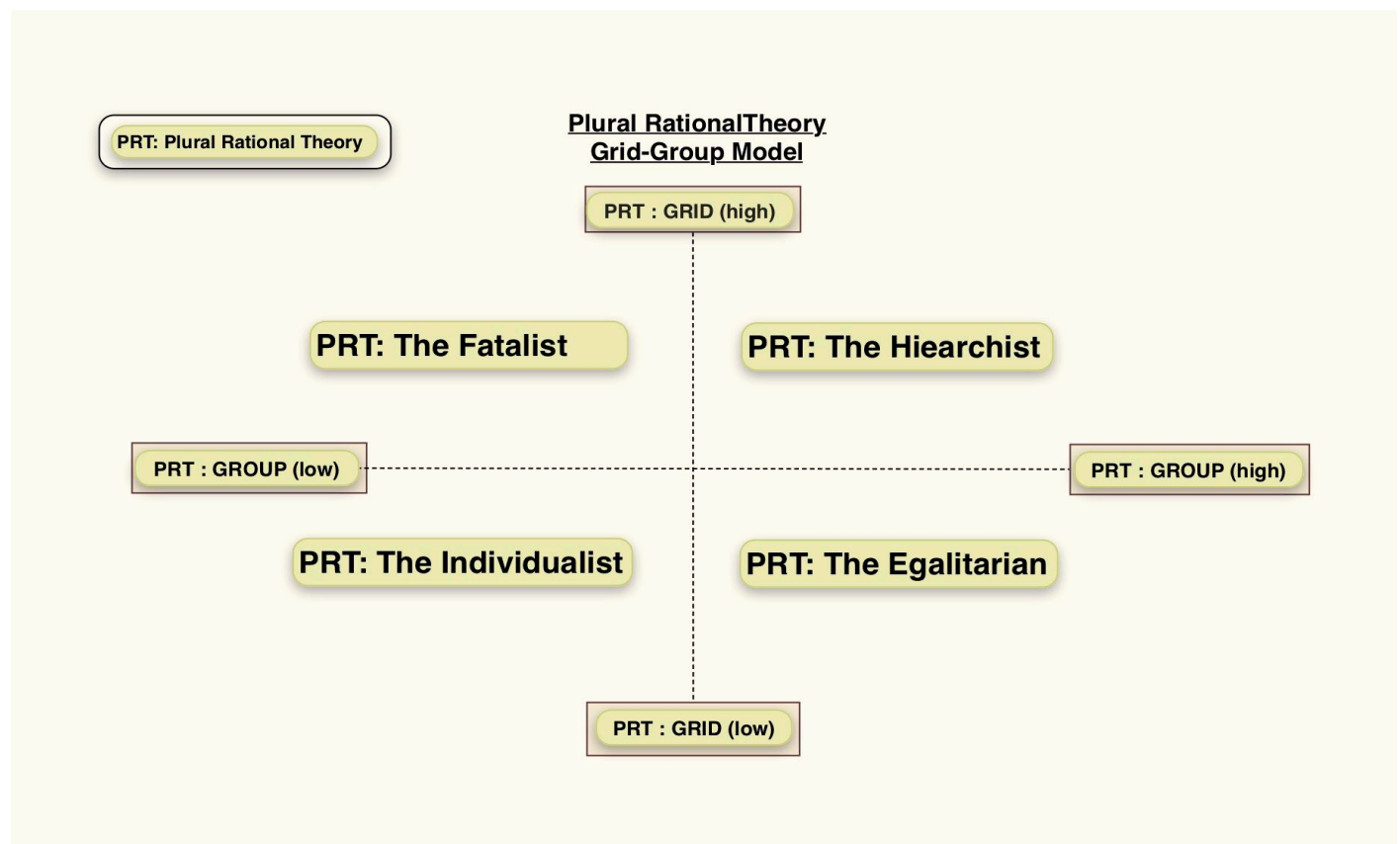
Culture is transmitted through social relationships (Fiske & Fiske, 2006). Culture is acquired, to a large extent not directly from formal teaching, but rather to a large extent, indirectly through observation and imitation. Children are keen observers of others’ behaviors and glean much without proper instruction, guided by what others around them value in their environment. Starting at early ages and onwards through adolescence and beyond, children learn from each other and from adults by imitating valued behaviors through play, especially pursuing cultural knowledge held esteemed others.

Such information is not simply exchanged, but embodied by individuals, which across a population results in certain patterns emerging across many individuals as culture (Richerson & Boyd, 2005). Such things as skills, beliefs, values, and emotions have culturally defined meaning which guide individuals to behave in certain culturally approved ways or serve as cultural norms for evaluating others' behavior. The complex of such cultural skills, beliefs, values, and emotions coalesce into an ever encompassing, perceived collective reality or way of life, although imprecisely so since an individual can only approximate the vast collection of cultural information. However, there is an underlying logic which clumps together skills, beliefs, values, and emotions into several different recognizable patterns which guide individuals to coordinate thinking and acting collectively, a sort of simplification of the vast combination of ways individuals interiorize the world, which manifest in worldviews.

The search for a general set of patterns of worldviews was put forth by Plural rationality theory (PRT) (Douglas, 1978), originally referred to as Cultural Theory (CT) and later Grid Group Theory, but renamed to avoid conflation with other meanings of "Cultural Theory." PRT posits that people socially orient their world along two fundamental bipolar dimensions called Grid and Group. These dimensions map the degree to which social relations vary across a bipolar spectrum. The grid dimension measures the degree of social differentiation within society (stratification/regulation), varying from hierarchism to egalitarianism. High grid worldviews value hierarchical structure in society with stratified social roles defined by position in society according to broad categories such as race, gender and class, with rigidity in social movement (Kahan et al., 2011). Low grid worldviews tend toward egalitarianism, valuing equality and equal rights, where individuals have opportunities apart from their position in society. The group dimension, on the other hand, quantifies the degree to which people seek to organize themselves into communities (collectivity/integration), varying from communitarianism to individualism. High group biases feature communitarian mindsets orienting behavior towards membership in a group, while low group biases yields an individualistic mindset viewing life as a competition between individuals, with little solidarity among members of society.

Plural Rationality Theory (PRT) posits grid and group constrain cultural ideas of how to order society and subgroups within society, which affects social structural patterns in social relations, crossing the

degree to which individuals orient towards Individualism to Collectivism (Group) with the degree of freedom they have in rules governing behavior running from high Stratification with concrete rules to leveled Egalitarian equality (Grid). PRT . When grid and group dimensions are intersected, four general cultural patterns emerge representing general person-types orientated as extremes along grid and group. Plural Rationality Theory names these cultural biases: Hierarchy (high grid, high group), Egalitarianism (low grid, high group), Individualism (low grid, low group), and Fatalism (high grid, low group). PRT posits cultural biases don't represent personality types or "distinct types of people, but instead to individuals or institutions following the principles of a given cultural bias in a given respect" (Favre & Sornette, 2016: 5). While an individual may adopt a worldview within or across a bias, at the collective level, they coalesce into general clusters representing culturally distinct sets of values, beliefs, behaviors, and social tendencies, with each cluster having its own rational system, general mode of social interaction, typical experienced emotions, metaphoric understanding and concepts used to describe the world, functioning as a kind of consensus reality.



**Fig. 1.1** - Grid-Group Plural Rationality Theory Model - *Source: Bruce (2013)*

The study of cultural cognition explores how culture worldviews influence cognitive perception in the

form of beliefs, morals, and values and how such worldviews contain values which cause their holders justify their own worldview. Such a dynamic often prevents holders of those worldviews from being able to “see” aspects of other worldviews, especially when worldviews come into direct contradiction. Worldviews may prevent the perception or comprehension information pertaining to risk or strategies mitigating risk due to these biases (Kahan, *et al.*, 2011). What one worldview may perceive as risky or immoral might to another seem innocuous, or vice versa. And when holders of worldviews are presented with evidence which may challenge beliefs or some logic of the worldview, people will often subconsciously choose to believe or alter perception to maintain agreement with esteemed others holding their same worldview in order to “minimize the danger of community estrangement” (Kahan, *et al.*, 2011).

Plural Rationality Theory’s four cultural biases represent generalized systems for ordering interpersonal relations, explaining how people interact, not why. To answer why requires understanding the values which motivate behavior, the province of moral psychology. An attempt to understand the link between interpersonal relations of Plural Rationality Theory and the psychological dimensions of moral and ethical reasoning was made by Bruce (2013), who presents a unified theory attempting to unite PRT with two moral theories having strong empirical support: Moral Foundations Theory (MFT) (Haidt, 2012) and the Big “Three” Ethics of morality (Schweder *et al.*, 1997). The unified model shows the logical mapping of these cultural biases, complete with their own rational systems of thought, with Moral and Ethical dimensions divided modern general political ideologies. The structure of PRT provides a model of social organization, while MFT and the Big “Three” theories integrate predictions and explanations for behavior with this framework grounded in moral dimensions (Bruce, 2013). The resulting integration provides “an accurate account of both how and why people behave as they do” (Bruce, 2013: 44).

Moral Foundations Theory (MFT), provides a framework for understanding the building blocks of moral psychology, positing a basic set of psychological foundations, or intuitions, provide the mechanism from which underlying the logics of moral judgment arise. However, rather than focusing on the content of morality, MFT defines morality functionally, in how it works to “suppress or regulate self-interest and make cooperative societies possible” (Haidt, 2012: 314). While earlier work in moral psychology focused on largely on fairness (Kohlberg, 1981) and care (Gilligan, 1982) as the core principles of morality, MFT sought to identify and quantify additional moral intuitions



governing morality valued in non-western societies studied by anthropologists, largely focused with binding groups together and maintaining their purity. The foundations were measured through questionnaire based inventories of answers people gave to moral statements, testing the degree to which people agreed or disagreed with hypothetical moral issues.

Haidt and co-researchers specifically studied American political ideologies to find what each political worldview valued morally. Their findings indicated that while American Liberals most highly valued what they characterize as “individualizing” morals of fairness and care, American Conservatives valued group-binding morals such as loyalty/ingroup, authority and sanctity/purity, in addition to care and fairness, albeit to a lesser degree than Liberals. A sixth foundation having empirical evidence was offered to account for the moral intuition of Libertarians, who were found to highly value personal autonomy, represented by a foundation of liberty, while greatly devaluing the other five moral foundations compared to Conservatives and Liberals (Haidt, 2012; Iyer *et al.*, 2012).

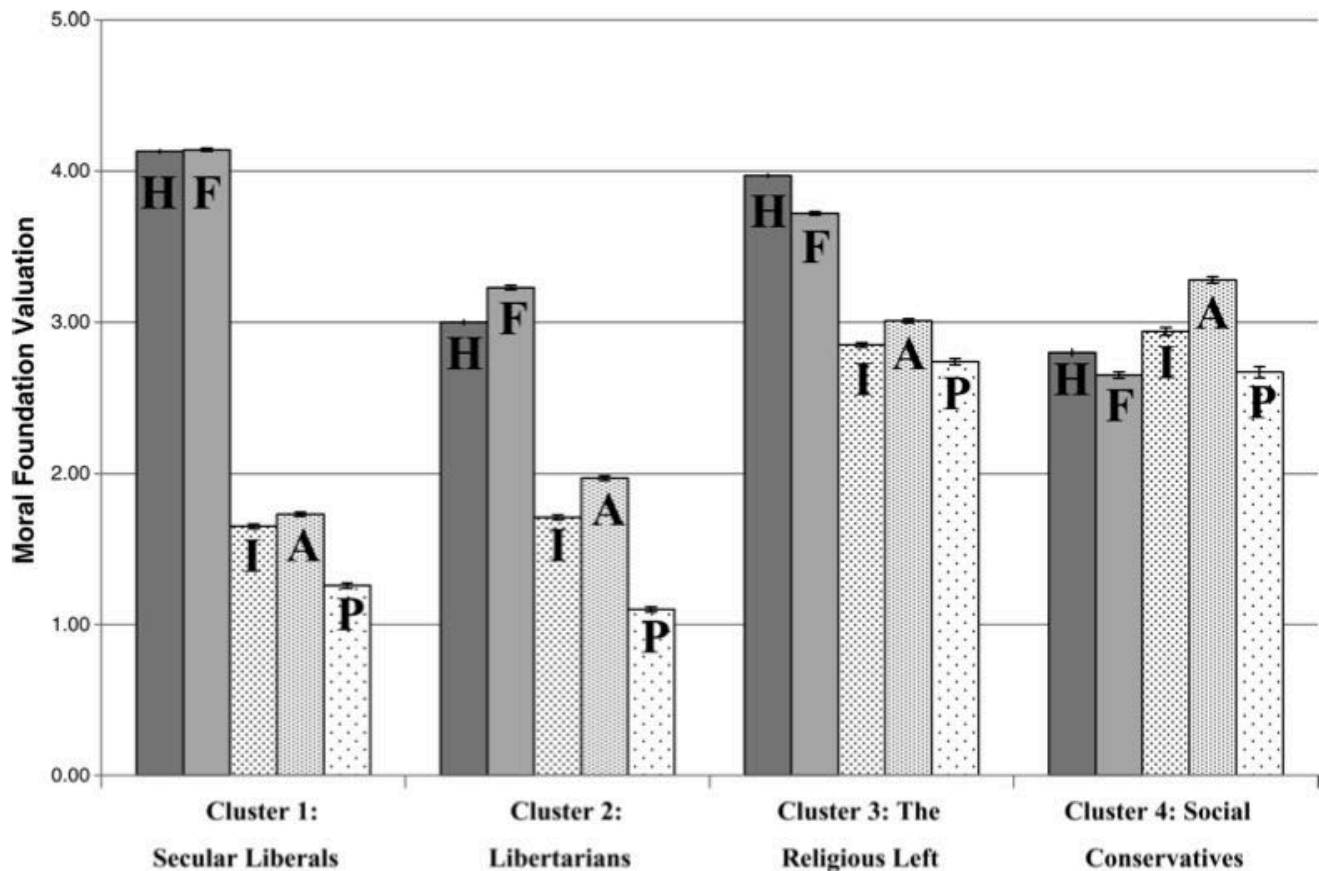
<b><u>Moral Foundation</u></b>	<b><u>Challenge</u></b>	<b><u>Virtues</u></b>
Care/Harm	caring for vulnerable children	kindness, gentleness, nurturance
Fairness/Cheating	punishing free riders	justice, rights, autonomy
Authority/Subversion	forming relationships w/in hierarchy	leadership, deference to legitimate authority & respect for traditions
Loyalty/Betrayal	creating & sustaining cohesive coalitions	Patriotism & self-sacrifice for the group
Sanctity/Degradation	maintaining clean surroundings	noble, cleanliness, free from immorality & contaminants
Liberty/Oppression	resisting domination by the powerful	liberty from oppression, cerebral, & individualist

**Fig. 1.2** - Moral Foundations - *Source: Haidt (2012)*

The six Moral Foundations in **Fig. 1.2**, are proposed as cognitive modules having evolved as adaptations for overcoming common challenges of social life. From these building blocks, cultures construct rules governing social life guided by signature emotions and leading to valued virtues. The importance and value of these foundations vary across groups, characterized as “moral tastebuds” which cultures or subcultures “shrink or expand” to meet challenges (Haidt, 2012).

In further research, Haidt and colleagues subsequently discovered four social groupings of respondents to the Moral Foundations Questionnaire (MFQ) which emerge with distinct moral profiles when MFT was mapped to personality dimensions (Haidt, Graham & Joseph, 2009). The clusters map to labels of the original MFT division between Liberalism and Conservatism, plus two others labeled Libertarianism and the Religious Left (Haidt, Graham & Joseph, 2009), as can be seen

in the **Fig. 1.3** below.



**Fig. 1.3** - Four Cluster Moral Foundation Valuation - *Source: Haidt, Graham & Joseph (2009: 113)*

The original five foundations in **Fig. 1.3** are Harm/Care (H), Fairness (F), Ingroup (I) now referred to as Loyalty, Authority (A) and Purity (P), now referred to as Sanctity. Cluster 1 clearly values Harm and Fairness far above the other moral foundations, while scoring lowest on binding foundations of loyalty, authority and purity. Similarly, Cluster 2, a perspective also valuing individualistic over binding foundations, having lower scores for the standard five, but characterized by the later inclusion of the sixth foundation, liberty (not measured in this study). While Cluster 4 unmistakably corresponds to one valuing group binding foundations of loyalty, authority and purity, their lower scores on harm and fairness differentiate it from the third cluster. Cluster 3 values group binding similar to Cluster 4, yet also highly values harm and fairness similar to Cluster 1. MFT identifies these clusters as matching ideologies of Secular Liberals, Libertarians, the Religious Left and Conservatism respectively. MFT identifies points of agreement between the Religious Left and Social Conservative clusters high in binding foundations, while Religious Left and Secular Liberal clusters

share high valuations of individualizing foundations. These help to provide a more nuanced view between political worldviews beyond a traditional bi-polar moral logic of Liberal versus Conservative.

Haidt (2012) may have included only Clusters 1, 2, and 4 in his analysis due to its similarity to another moral model having great influence on his research, and of which MFT seemed to provide a type of confirmation. This other moral model, the Big “Three” Ethics (Shweder *et al.*, 1997), may constrain the MFT model’s focus on three ideological clusters. Yet, as will later be shown, the four-cluster groupings of MFT valuation profiles provides a fuller picture of the diversity of moral logics within the single American political system, and Bruce (2013) uses each of the four to map to PRT’s Grid-Group biases.

The Big “Three” Ethics of morality represent culturally universal moral concepts that provide a social orientation for explaining causation. They cluster around three universal realms thought by people to be causative agents of moral suffering in their desire to make suffering understandable. Shweder *et al.* (1997) conducted cross cultural research to find universal dimensions defining the most common causes of suffering, with three categories emerging in what they termed as Autonomy, Community and Divinity, mapping roughly to interpersonal, environmental/biomedical and moral explanations. These categories refer to general ethical frames for the moral orientation toward protection from risk.

<b>Autonomy</b>	<b>Community</b>	<b>Divinity</b>
Code 1	Code 2	Code 3
Harm, Rights, Justice	Duty, Hierarchy, Interdependence	Sacred Order, Natural Order, Sanctity, Tradition
Individual as a Practice	Actor In a Play	Way of Life
Structure	Role-Based Social Status	Practice
	Family	World Soul
Obligations come from being a person	Obligations come from being part of a community	displaying dignity by showing ultimate concerns
free agent	social, not selfish	human, not beast
agency	Community	heroic enchantment
appetites	holism	soul memory
free contact	sacrifice	angelic side of human nature
marketplace	membership	hermit-yogi
Beast	Communitas	Angel

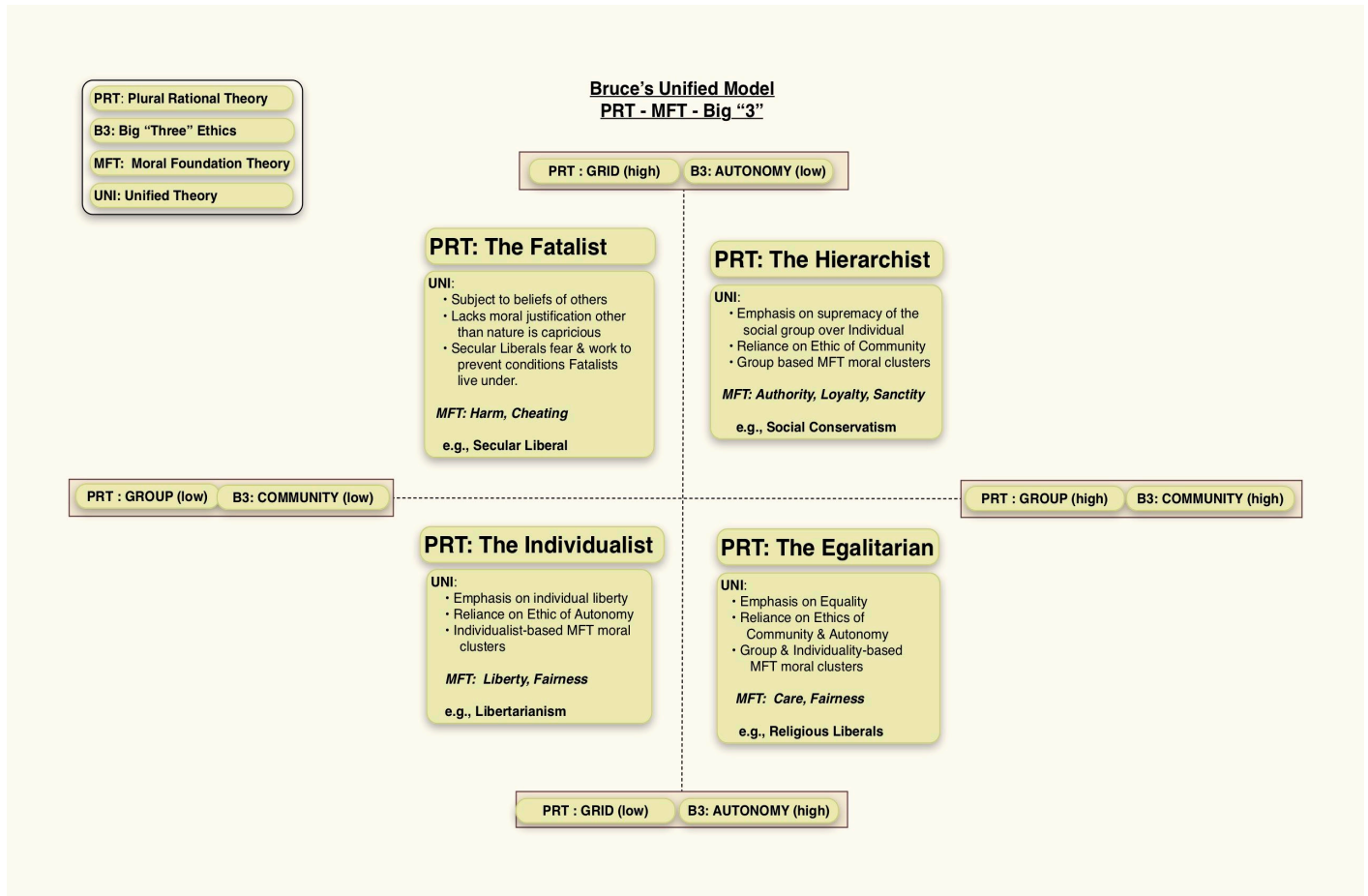
**Fig. 1.4** - The Big “Three” Ethics - *Source*: Shweder (1997)

The ethic of autonomy focuses on morals protecting the autonomous individual, such as rights, prevention of harm and justice (Haidt, 2001). The ethic of community focuses on morals protecting collectives such as loyalty, duty, honor, respect. The ethic of divinity focuses on morals protecting

spirituality, with morals of purity, sanctity, protection against degradation and the sacred. While different cultures vary in their focus and weight on one or more of these dimensions, all cultures to some degree recognize each of these domains in what may be termed folk theories, reflecting how societies order reality to protect from risk (Shweder *et al.*, 1997).

Some cultures might attribute most suffering to be caused by a personal interaction (Autonomy), from superstitious causes like sorcery or black magic to modern conceptions such as harassment, abuse or “toxic relationships” (Shweder *et al.*, 1997). Cultures may also be oriented towards blaming community or biomedical causes ranging from disease from exposure to out-groups or the unclean, to stress, genetically modified food, environmental contaminants, or even cultural ideologies. Cultures too can be oriented towards very general divine or religious explanations including karma, sin, psyche, spirit, astrology, etc. These causative dimensions are accompanied by therapeutic systems for managing or eliminating suffering, ranging anywhere from exorcism, cleanses, or interventions depending on the cultural orientation and what was thought to be the source of suffering.

Bruce’s unification of PRT and MFT involves seeing the similarity in the high Grid-high Group Hierarchical cultural view mapping to the morals of Social Conservatives, whose values of Authority and Loyalty reinforce and maintain stratification and the collective. Bruce maps the low grid-high group Egalitarian cultural view to the Religious Liberal morals of care and reciprocity, which favors individual morality while maintaining the collective. The low Grid-low Group Individualism worldview maps to Libertarianism’s moral of liberty, while the high grid-low group Fatalists map to Secular Liberalism (tenuously), seemingly most concerned with protection from harm and cheating. However, Bruce points out that Fatalists seem to be who “Secular Liberals are worried about, rather than describing the lived experiences of Secular Liberals themselves” (Bruce, 2013: 44).



**Fig. 1.5** - Cultural Unified Model - *Source: Bruce (2013: 45, Fig. 3)*

Similarly, the Big "Three" Ethics can be mapped to the PRT model, as the Autonomy ethic aligns with the individuality aspect of grid, while the community ethic aligns with the communitarian aspect of group. The grid-group dimensions describe the structure of social organization while the Autonomy/Community ethics describe how morals ought to be centered. The mapping of the two systems yields dimensions of Group/Community and Grid/Autonomy, although for Grid/Autonomy the mapping is reciprocal, in that hierarchy and stratification of high Grid restricts low Autonomy, while low Grid eases the restriction on and allows for high Autonomy. Bruce speculates the Divinity ethic to be tentatively related to another aspect in PRT called Grip, essentially the degree to which people incorporate, digest and affirm their cultural worldview bias (Bruce, 2013).

The mapping of these three domains together yields a Unified Model combining MFT, the Big "Three" and the PRT structure defining a coherent model encompassing PRT's interpersonal relations with Political worldview's moralities and ethical dimensions. Most importantly, Bruce states the unified theory provides a framework for empirically testing PRT by using moral narratives

of MFT against observable accounts of how and why people behave the way they do according to their political worldview and cultural biases. A deficit of PRT has been its lack of an analytic measure of cross-cultural data (Caulkins, 1999). While Bruce states more work is left to fully integrate the theory (like ferreting out the liberty dimension from MFT and integrating Divinity from the Big “Three” more fully), it provides a solid base for a testable theory of cultural morality (Bruce, 2013).

What makes Bruce’s effort noteworthy is his attempt to uncover a deeper structure underlining the differences between cultural worldviews. As will be demonstrated later, the patterning at the cultural level reflects deep structure connected to human behavior, psychology, emotions and neurophysiology, rooted in how humans process and reason about social perception.

## CHAPTER TWO

### Cultural Cognition of Risk

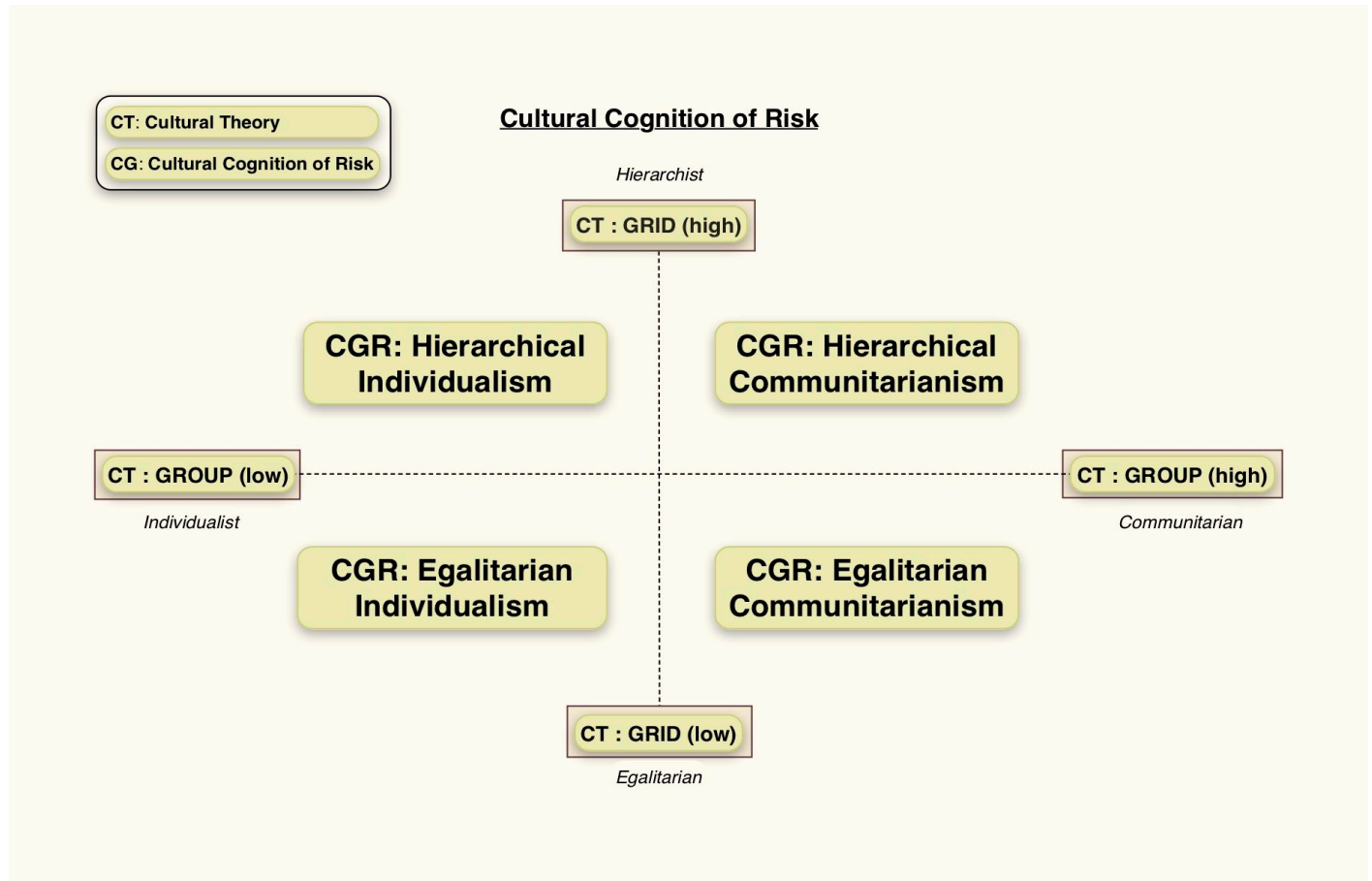
*“The high degree of rationality individuals display in forming risk perceptions that express their cultural values can itself inhibit collective welfare rationality by blocking citizens from converging on the best available scientific evidence on how to secure their common interests in health, safety, and prosperity.” Kahan et al. (2011: 89)*

Cultural worldviews place constraints on individual reasoning, biasing perception of the world, especially the perception of risk (Kahan *et al.*, 2007). The theory of Cultural Cognition of Risk (CCR) studies how worldviews unconsciously shape perception of environmental and technological risk, as group affiliations and psychological pressures towards affiliate group attitudes alter individual perception of consequential facts to agree with cultural bias (Kahan *et al.*, 2007). CCR posits that cultural worldviews bias one’s perception towards rationally choosing a belief which reinforces one’s identity within a worldview, while protecting against evidence which challenges those beliefs and threatens cultural identities (Kahan *et al.*, 2007).

Cultural Cognition of Risk measures the effect of cultural cognition across contentious issues, such as Climate Change. CCR posits that while scientific evidence of climate change might convince one of its validity, holding the belief that it is real doesn’t help in one’s life if climate change doesn’t directly affect them. Rather, for individuals identifying with a cultural worldview skeptical of climate change, agreeing with one’s worldview provides a subconscious rational reason to hold the belief against climate change evidence and instead in support of counter-evidence. CCR terms this bias cultural-identity-protective cognition (Kahan *et al.*, 2007).

CCR offers that many types of issues involving attitudes about how society should assess risk differentiate following the pattern of PRT’s cultural biases. CCR uses the same grid-group framework as Plural Rationality Theory, comparing how the PRT worldviews differ in risk perception and provide a logic for which adherents are influenced by cultural cognition. That logic represents

psychological frameworks for selecting and dismissing information which can either confirm or conflict with cultural worldview specifically towards perception of risk to cultural identity. CCR uses different terminology for the CT dimensions, using instead Individualism/Communitarianism and Hierarchist/Egalitarian labels for the group and grid dimensions, as in **Fig. 2.1** below.



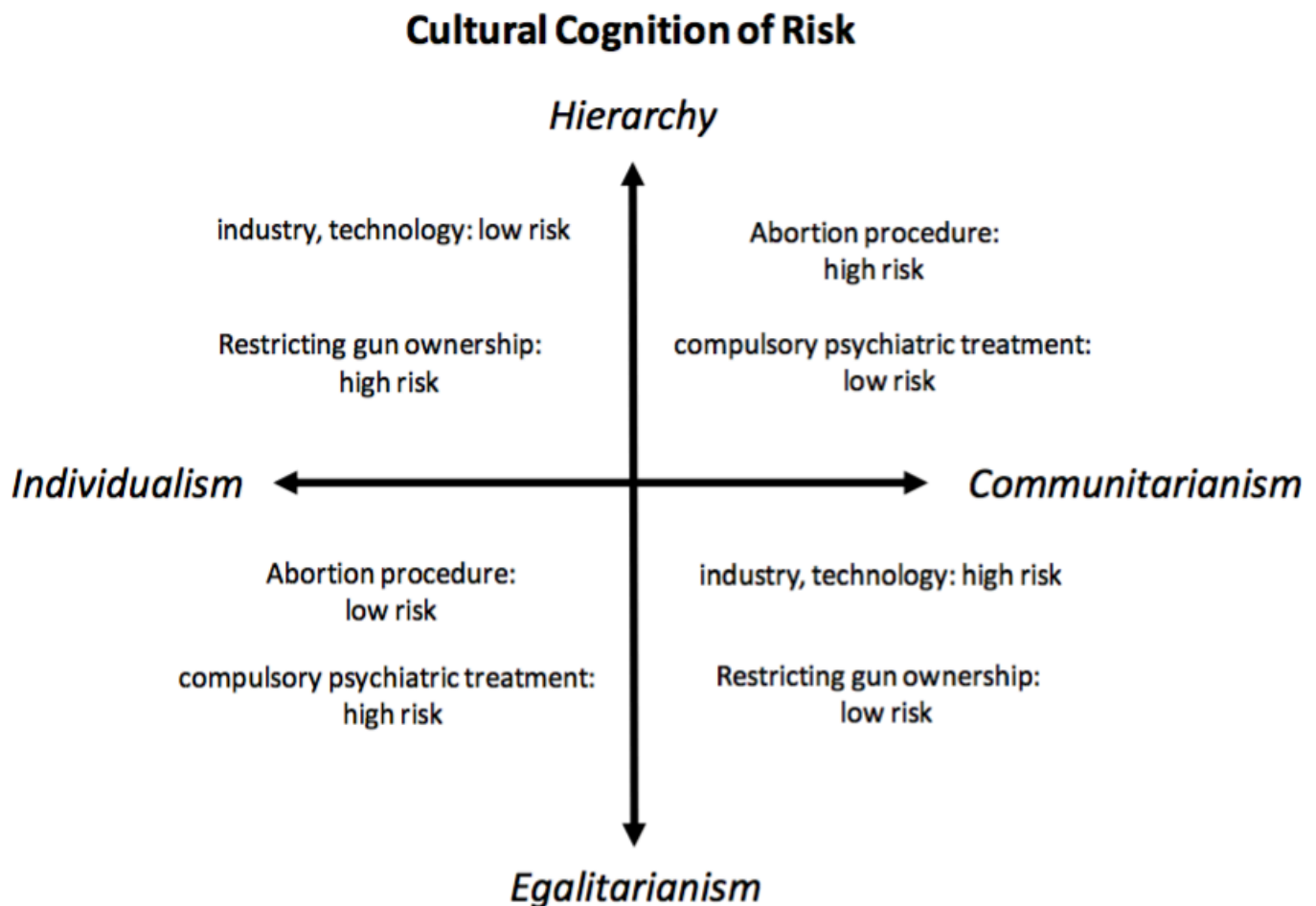
**Fig. 2.1** - Cultural Cognition of Risk Dimensions - *Source: Kahan et al. (2011)*

The cultural theory of risk perception (Douglas & Wildavsky, 1982) upon which it is based, offers that ideals of how society should be organized strongly influence whether risk is taken seriously or dismissed according to the norms of particular grid-group biases. These biases then come into conflict, as “hierarchical and individualistic worldviews showed disagreement with egalitarian and communitarian worldviews about expert consensus on these issues” (Kahan *et al.*, 2011). The data support the conclusion that knowing cultural worldview could be predictive on one’s likelihood of seeing these issues as high or low risk, regardless of other person characteristics (age, gender, race, etc). However, it doesn’t affect one worldview or the other, but that “Hierarchical Individualists and Egalitarian Communitarians were equally likely to hold mistaken beliefs about “scientific



consensus” (as reflected in National Academy of Sciences “expert consensus” reports) on culturally charged risk issues” (Kahan, Jenkins-Smith & Braman 2011).

Besides climate change, Kahan et al. (2011) also studied risks from nuclear waste disposal, as well as more socially oriented issues with divided opinion, like the risk presented by abortion and by guns. For issues in which perception of risk affect cultural-identity, such as the risk from some activity threatening the livelihood of an esteemed profession of the cultural group, they show an extraordinarily high skepticism towards expert opinion which asserts it as risk. For example, managers and executives in corporations in the coal industry accused of adversely contributing to environmental climate effects, for whom there is a negative assessment of their activity, may lead them to dismiss strong empirical evidence of their work as increasing risk of climate change (Kahan, 2007). Cultural-identity-protective cognition helps discount conflicting evidence and embolden skepticism of risk precisely because of a subconscious motivation to protect culturally derived identity.



**Fig. 2.2** - Cultural Cognition of Risk Issue Dynamics - *Source: Kahan et al. (2011: 20, Fig. 5)*

This dynamic helps to explain the phenomenon of hierarchical white males' skepticism about gun violence, which is attributable to the many hierarchical cultural-identities in which guns hold particular salience (policing, military, hunting, etc.), the perception of risk from guns threatens (Kahan *et al.*, 2007). Insensitivity to risk and extreme skepticism by hierarchical white males is a defensive response to cultural identity threat, yet they "are by no means uniquely vulnerable to this condition," as other segments of the population including Egalitarians and Communitarians exhibit "distinctive patterns of risk perception" (Kahan *et al.*, 2007: 3). For women, the issue of abortion threatens the domestic cultural-identity of motherhood, which for hierarchically oriented women are challenged by newer individualistic and egalitarian professional female identities in which choice is salient (Kahan *et al.*, 2007). Similarly, Egalitarian concerns about technological and environmental risks which they assess as "producing social inequality or legitimizing unconstrained self-interest" (Kahan *et al.*, 2007). New technologies such as nanotechnology and its applications to human health are seen by Egalitarians negatively. Exposure further scientific evidence supporting that technology increases Egalitarians' skepticism, while Hierarchists are oppositely influenced towards increasing agreement with expert analysis (Kahan *et al.*, 2009).

Previous theories about why this division, especially in context to political polarization across technical issues, are challenged by CCR. It provides empirical evidence that despite much thinking to the contrary, differences in attitudes towards risk conform towards one's worldview and not necessarily due to an individual's lack of scientific or rational understanding. CCR challenges an amalgam of several different theories called the "public irrationality thesis" (PIT) which attempt to explain the irrationality of public consensus versus the individual attitudes towards climate change or other issues of risk related to technology. PIT uses several theoretical components to explain irrationality. "Scientific illiteracy" theory posits irrationality stems from a deficit of scientific understanding. "Bounded rationality" theory posits two separate forms of information-processing exist: System 1, which relies on quick, innate decision-making "heuristics" while the other, System 2, involves slower, conscious inferential processing, with the later yielding far higher degree of rationality (Kahan *et al.*, 2011). PIT also integrates Cultural Cognition, which posits that conforming to group attitude is simply one of the System 1 heuristics.

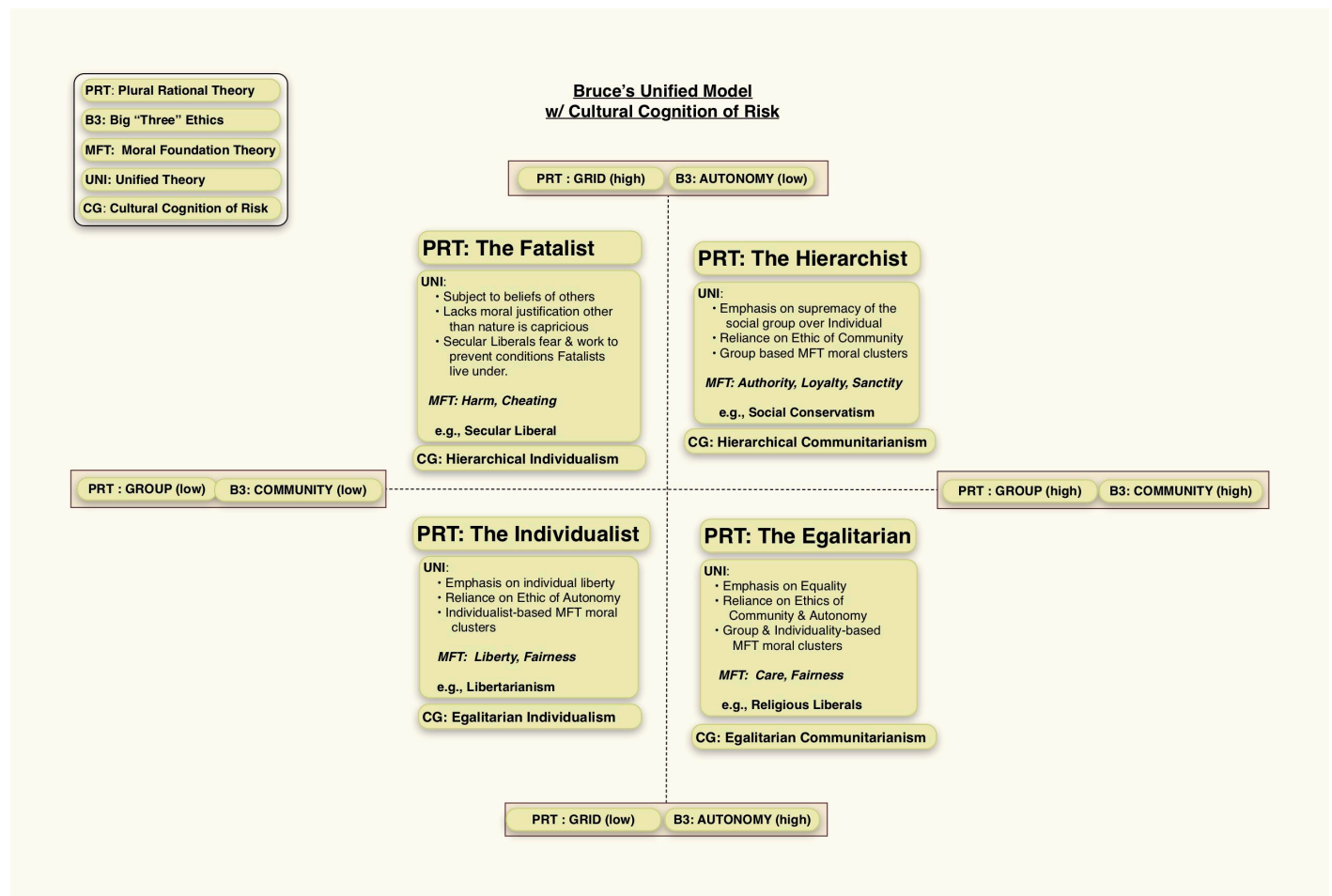
PIT predicts that the public's concern with these risks should diminish with an increase in scientific literacy and numeracy and agreement with scientific consensus. However, CCR challenges PIT with counterintuitive empirical evidence showing increases in scientific literacy or individual rationality can actually enhance one's tendency to choose a belief consistent with one's the cultural worldview (Kahan *et al.*, 2011). While this may benefit individuals by improving their group standing by taking up a rational belief congruent with their cultural worldview, it can promote the support of irrational cultural beliefs. "The high degree of rationality individuals display in forming risk perceptions that express their cultural values can itself inhibit collective welfare rationality by blocking citizens from converging on the best available scientific evidence on how to secure their common interests in health, safety, and prosperity" (Kahan *et al.*, 2011). In fact, CCR finds that increased scientific literacy and numeracy actually widens the gap between worldviews, fostering disagreement and polarization (Kahan *et al.*, 2011). This tendency threatens arriving at societal consensus on important issues and explains a great deal of why the current public discourse is experiencing such discord.

CCR in effect shows that there are "rational" modes of cognition. One is individualist, where knowledge and reasoning capacities are marshaled to "maximize correspondence between their own perceptions of societal risks and the perceptions which predominate within the cultural groups to which they belong" (Kahan *et al.*, 2011: 4). The other orients toward the collective, sort of a social mode of cognition, where agreement with cultural peers provides a rational objective for having a particular view or belief, no matter the truth value of the belief. Holding the group-centric belief is rational in that it confirms a congruence between the belief and "individuals' cultural commitments" (Kahan *et al.*, 2011). That rationality is confirmed, when holding that belief improves social standing within the group by confirming one's cultural-identity. Thus, cognition oriented towards confirming one's identity, whether as an individual or member of a group, can have profound effects in cognitive style and subjective/objective truth statements. Problems arise when groups become so polarized that their group-confirming biases outweigh individual rationality.

*"This conflict between individual and collective rationality is not inevitable. It occurs only because of contingent, mutable, and fortunately rare conditions that make one set of beliefs about risk congenial to one cultural group and an opposing set congenial to another. Neutralize these conditions, we will argue, and the conflict between the individual and*

*collective levels of rationality is resolved. Perfecting our knowledge of how to achieve this state should be a primary aim of the science of science communication.” Kahan et al. (2011: 2)*

While CCR frames cultural worldview only in PRT’s terms, Bruce’s Unified Cultural Model maps political ideology to PRT’s worldviews. This sheds light on the particular dynamics of identity conflicts between conservative and liberal political ideologies. The Hierarchist worldview’s orientation towards assigning status based on stratified cultural identities makes challenges to traditional identities threatening, activating culturally protective cognition and perception. Thus, identity politics themselves evoke much of the discord via cultural-identity protective cognition, as the great expansion & fragmentation of identity in the modern world challenges tradition and hierarchy.



**Fig. 2.3** - Unified Cultural Model adding Cultural Cognition of Risk

This has important consequences for debates in the political arena, where discourse has diminished because of a clash of cultures, or rather of cultural cognitively protective cognition. This cognitive mechanism demonstrates people reject information threatening beliefs central to their identity. It also demonstrates exposure to information threatening one's cultural views drives one further towards culturally-protective cognition, increasing polarization. As mainstream and social media continually focus on a core set of social issues of great contention, CCR provides an explanation of the increased division, as cultural-identity-protective cognition provides a set of culturally tuned rationale for argumentation that feels totally correct and protects against counter-evidence directly challenging one's core beliefs and identities. In today's increasingly risk focused society (Beck, 1992), the polarization of cultural worldviews and political conflict has increased as people are forced to increasingly shoulder the burden of risk that was previously borne by government (Martin, 2007).

Cultural Cognition of Risk's empirically based methods can serve as an important cross-test of the MFT's moral logic and Big "Three" ethics and their orientation with worldviews. CCR's empirical evidence provides a predictive model of how people will answer questions about risk if their location on the Grid/Group map is known (Kahan *et al.*, 2007). This pattern provides some hope for coming to some kind of consensus for those issues which have so divided the public, for we can become aware of how information can be presented that doesn't challenge one's identity, but instead finds a common moral and ethical frame that all worldviews may understand.

Triggering of identity-protective-cognition contributes to greater division and reliance upon social stereotype in assessment of those not sharing similar cultural group beliefs and values, which then increases further polarization and affects social perception.

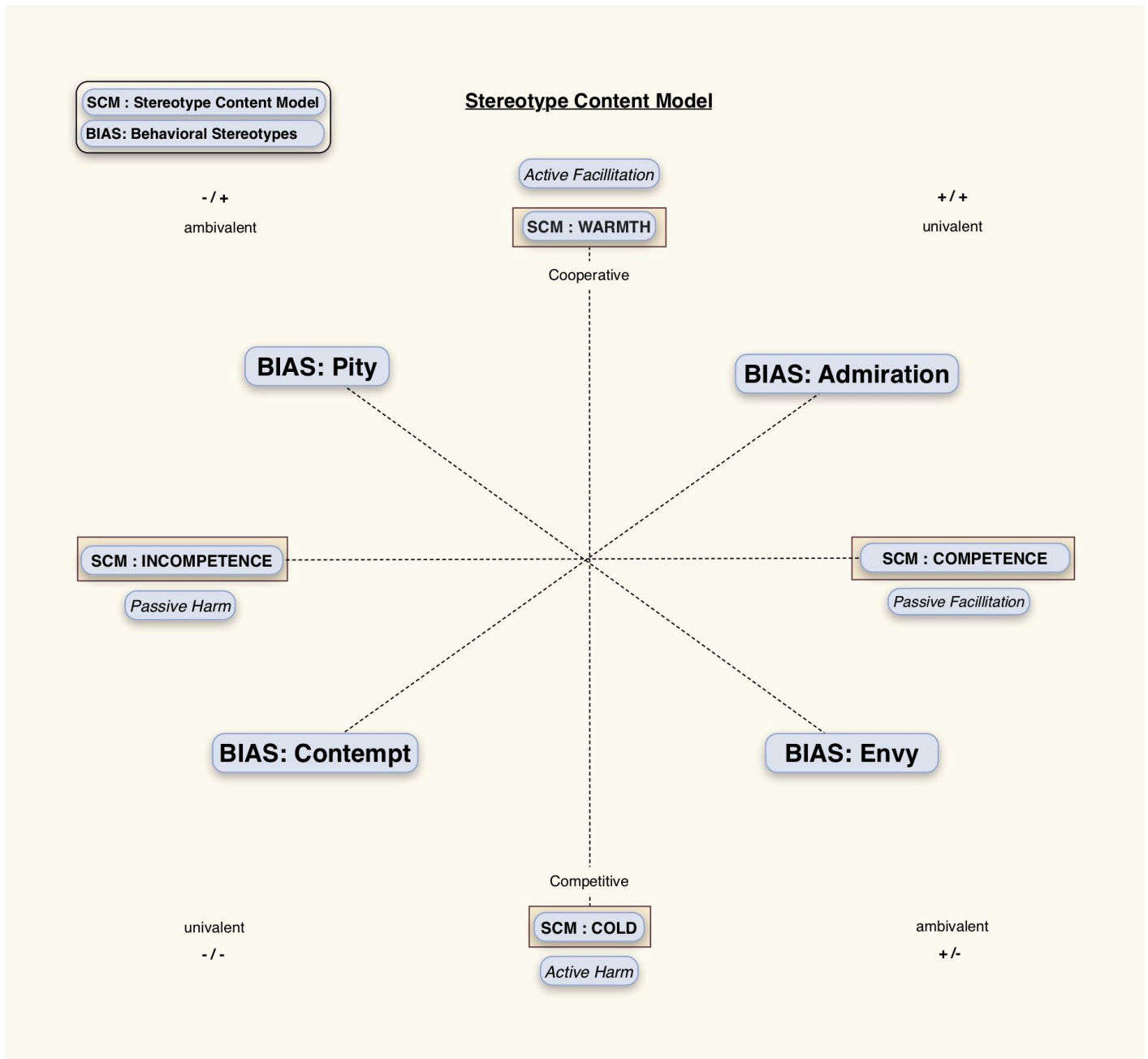
# CHAPTER THREE

## Social Cognition & Group Perception

*“Stereotypes can legitimize antipathy towards out- groups. However, the social structure creates these relationships of antipathy and stereotyping” Fiske et al. (2006: 81)*

Social Cognition reflects how people form impressions both of individuals and of groups, gauging their intentions and their ability to act on those intentions, in an effort to determine whether one is friend or foe (Fiske *et al.*, 2007). Social Cognition, taking the form of social judgment, has been shown to vary along two analytic dimensions, which cross cultural research has found to be universal dimensions of Warmth and Competence, experiencing these two dimensions as liking and respecting, respectively (Fiske *et al.*, 2007). The warmth/liking dimension measures the degree to which we expect another’s intention to cooperate rather than compete in interpersonal competition (Fiske, 2012). The competence/respecting dimension measures the capability of another to enact those intentions (Fiske, 2012). Social perception isn’t judging individual personality; but rather “correlates to the structural relationships between groups, the outcome of interpersonal relationships” (Fiske, 2012).

Social cognitive research has inventoried group stereotypes measured across Warmth and Competence using the Stereotype Content Model (SCM), finding that their variance produces four general clusters of group types that emerge from intergroup relations. A BIAS map, standing for **B**ehavior from **I**ntergroup **A**ffect and **S**tereotypes, shows particular patterns of behavior by social perceivers towards groups according to perceived group warmth and competence judgments. The dimensions of warmth and competence affect the behavioral outcomes of group interactions, with perceived warmth eliciting active behaviors, while secondarily perceived competence elicits passive behaviors (Cuddy *et al.*, 2008). These patterns in social perception result in behavior promoting “active facilitation (e.g., helping), active harm (e.g., harassing), passive facilitation (e.g., convenient cooperation), and passive harm (e.g., neglecting)” (Cuddy *et al.*, 2008: 70).



**Fig. 3.1** - Stereotype Content Model (SCM) & BIAS - Source: adapted from Fiske *et al.* (2007)

The BIAS map (**Fig. 3.1**) offers outward emotions shown by perceivers pairing with these behaviors, where “admired (i.e., competent and warm) groups elicit both active and passive facilitation, that is, both helping and associating. Resented, envied (i.e., incompetent and cold) groups elicit both kinds of harm: active attack and passive neglect” (Cuddy *et al.*, 2008: 71). In-groups and reference groups, both typically judged to be high in both warmth and competence, are seen with Admiration while receiving active help, protection, and association (Cuddy *et al.*, 2008). Societal out-groups, judged to be cold and incompetent, are viewed with Contempt while being subject to attack, neglect, and

demeaning. Groups judged as warm but incompetent are seen with Pity, receiving active help while being subjected to passive harm and neglect. Groups judged as competent yet cold are viewed with mixed emotions of Envy and Resentment, subject to stereotypes of exploitative and receiving active attack (Cuddy *et al.*, 2008). BIAS emotions in which both dimensions agree in valence are said to be univalent, either both positive or both negative. Groups having mixed hi/low ratings of Warmth/Competence, are viewed with mixed emotions and said to be ambivalent.

Stereotyped social perception of general groups according to Warmth & Competence in **Fig. 3.1** represent both pan cultural aspects, as well as culturally specific aspects (Cuddy *et al.*, 2008). Some general groups are stereotyped in roughly the same places across all cultures, particularly low status groups judged with contempt (i.e., the poor, uneducated) and high status groups seen with admiration (i.e., educated, professional, middle class), tending to be univalent groups, either viewed uniformly negatively or positively (Cuddy *et al.*, 2008). The elderly, on the other hand, suffer ambivalent stereotyped perceptions as more warm than other groups, yet less competent (Cuddy *et al.*, 2008). While the elderly are venerated in some East Asian cultures, they too harbor the same stereotyped perceptions of the elderly as warm and noncompetitive, a finding that is supported by other research showing ageism to be pancultural (Cuddy *et al.*, 2008).

Fiske *et al.* (2006) posits that the stereotypes we have of groups and individuals are the result of certain biases which balance information about them from *impoverished* information or culturally held general impressions. “Stereotypes can legitimize antipathy towards out-groups. However, the social structure creates these relationships of antipathy and stereotyping” (Fiske *et al.*, 2006: 81). Stereotypes are greatly influenced by balancing our negativity bias, which may produce strong negative reactions to foreign or unfamiliar groups or low status individuals in the social hierarchy, although much of these attitudes are based on “accidents of history” (Fiske, 2012).

Groups perceived ambivalently receive a mix of active and passive prejudice, ambivalent behaviors & emotions. Ambivalent stereotype envy and paternalistic behavior has been theorized to maintain women deemed traditional (homemakers, mothers, wives) and subjected to paternalism (Cuddy *et al.*, 2008). Paternalist sexism has the effect of positive stereotypes as long as women mind their place, which is a form of social control and undermines equality (Cuddy *et al.*, 2008). However, non-traditional women (professionals, feminists, etc) suffer from stereotyped envious hostility from



prejudiced men who view them as competitors (Cuddy *et al.*, 2008).

Envious prejudice (low warmth, high competence) is often directed at “model” ethnic minority groups whose competition with in-groups “can motivate the most extreme forms of discrimination, ethnic cleansing and genocide” (Cuddy *et al.*, 2008: 124). In the US, it is presumed competence and competition from such ethnic groups which threatens prejudiced White in-groups, where positive stereotypes of high competence are accompanied by negative behaviors and emotions towards them, leading to fear and discrimination against them (Cuddy *et al.*, 2008). Ambivalent emotions of envy, produced from the perception of negative Warmth and positive Competence, may turn to anger, hostility and active harm when societies are under stress and out-groups blamed (Cuddy *et al.*, 2008: 112).

The SCM also makes an important contribution to understanding the differing pattern of ambivalent prejudice, with its theory called Stereotype-Confirming Attribution Bias (SCAB). SCAB resolves the inconsistency of the “Ultimate Attribution Bias (UAB)” which states stereotypes make negative dispositional attributions towards out groups and positive dispositional attributions towards in- and reference-groups (Cuddy *et al.*, 2008). However, the SCAB theory is able to more accurately differentiate prejudice effects on dispositional versus situational attributions when stereotypes aren’t wholly bad or good. Summed up succinctly, when “behaviors or outcomes match stereotypical expectations, perceivers are likely to make dispositional attributions...(while) behaviors and outcomes that are stereotype-inconsistent should be excused away” (Cuddy *et al.*, 2008: 130).

An additional attributional bias contributing to stereotype is the Group Serving bias in which in-group members tend to attribute positive in-group and negative out-group behavior to internal, dispositional causes. Conversely, in-group members tend to attribute negative in-group and positive out-group behavior to situational causes. Regardless, people tend to underestimate situational factors to behavior in general, related to the Fundamental Attribution Error. Thus, we may be biased toward attributing negative behavior of out-groups (e.g. unexpected or against role-type behavior) as causally related to negative dispositions, while attributing in-group negative behavior to situational causes.

Another relevant evaluative bias in social cognition affecting attributions is the actor-observer bias in

which evaluations of self tend towards considering situational factors, while the evaluation of others' behavior tends to be dispositional (Fiske & Taylor, 1991). One reason this bias differs between self-focus and other-focus seems to be the tendency to overestimate the causal factors of behavior. The observation of others includes being able to see another's behavior visually, where context must be inferred and causal behavior is attributed to the actor. However, we usually do not have the visual perspective of the self behavior, instead looking outward at the situation, over-weighting the perspective of the situation. Thus, disposition is highlighted when looking outward at others, while situation appears more salient when subjectively assessing our own behavior.

The difference between these two perspectives have direct connections to two competing theories which provide accounts of how generalized Social Cognition may work, one called Theory Theory (TT) and the other Simulation Theory (ST). Both offer a framework for how we try to grasp how others think. The former, TT, posits that social cognition functions via a mentalizing process, referred to as "mindreading" or theory of mind (ToM), where inferences are made about the social actions of others against a stored background of "folk" knowledge from a third-person perspective to glean the minds of other. The latter, ST, posits that social cognition originates from a mirror resonance system (Schilbach *et al.*, 2013), where mirror neurons activate when we think about another's social action and mentally "simulate" the intentions, thoughts and feelings one would have in that situation, which allows for understanding another's social action through the first person perspective. The TT is thought to operate via the large-scale neurophysiological Mentalizing Network (MENT), while the Mirror Neuron System (MNS) represents a separate large-scale network which supports ST (Schilbach *et al.*, 2013). TT and ST posit social information is gleaned through either subjectively thinking about or objectively observing social action, representing first-person and third-person points of view, respectively. Both TT and ST can be considered "spectator theories" (Schilbach *et al.*, 2013).

A challenger to TT and ST, termed Interaction Theory (IT) (Gallagher, 2009), represents a genuine alternative to the standard social cognition theories emphasizing the importance of a second-person perspective on social cognition. Interaction Theory (IT) posits that human social nature results from an embodied perception that does not require "mindreading" or mirroring others. Rather, social cognition is felt through primary motor-sensory processes and primary intersubjectivity, allowing for joint attention and joint action in highly contextualized situations (Gallagher, 2009).

Intersubjectivity is fueled through the direct exchange of affect laden, nonspeaking means (e.g. posture, gesture, vocal intonation), allowing for the direct experience of another's emotions, intentions and dispositions (Gallagher, 2009) making IT a 'participant theory' (Schilbach *et al.*, 2013). A primary intersubjectivity is established from the very earliest stages in ontogeny in which infants share affective laden interactions with caregivers in expressive, person-to-person communication events (cf Trevarthen, 1979). Primary intersubjectivity provides strong support for pluralist approaches to social cognition (Fiebich *et al.*, 2016).

Attempts at finding neural correlates of social cognition have primarily measured first-person and third-person cognition through subjects' detached observation of others' behavior (Schilbach *et al.*, 2013). However, the primary way people come to know each other is through "a social knowing based on interaction and emotional engagement" rather than simply from observation (Schilbach *et al.*, 2013: 395). Engaged interaction involves affective responses having important effects on cognition, which are absent detached observation (Laird, 2012). Engaged intersubjectivity amplifies affect, as well as enable unconscious or implicit processes be made explicit as conscious emotional states (Schore, 2009). A second-person neuroscience measuring an actor while engaged in dyadic social interaction is necessary to uncover differences in neurological processing of social stimuli (Schilbach *et al.*, 2013).

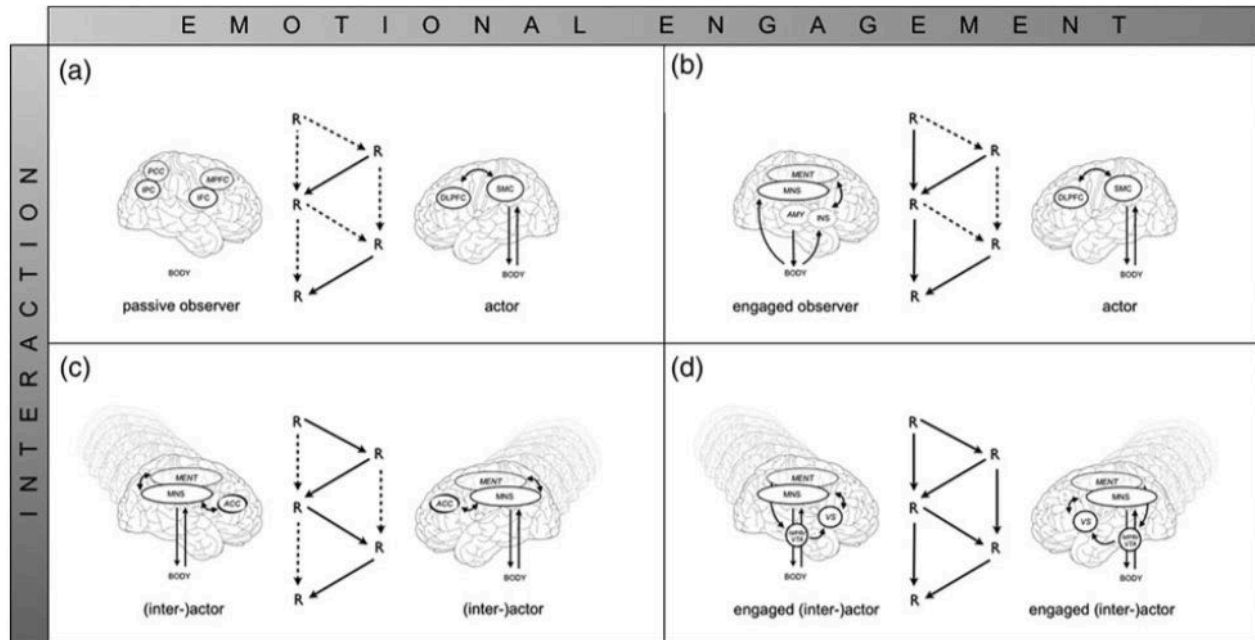


Figure 1. A–D:

**Center:** Schematic depiction of interaction contingencies for situations of (A) no (or little) social interaction and no (or little) emotional engagement, (B) no (or little) social interaction, but emotional engagement of person A with person B, (C) social interaction, but no (or little) emotional engagement, and (D) social interaction and emotional engagement. Dotted lines indicate the absence or relatively decreased influence of actions on oneself (vertical arrows) or the other (oblique arrows), temporal sequence is shown from top to bottom. (Schematic of interaction contingences adapted from Jones & Gerard 1967.) Despite the suggestion of linearity in the interaction sequence, our account also stresses the importance of interaction dynamics, which may be seen as emergent properties of an interaction, and possible inter-brain effects of social interaction (see sects. 2.3 & 3.2.2 for details).

**Left & right:** Schematic depiction of putative differences in the recruitment of brain regions during situations A–D and their functional connectivity (see sect. 3 for details). Brain regions on the medial surface or deep structures of the brain are shown in italics, brain regions on the lateral surface of the brain are shown in normal font.

### Fig. 3.2 - Neural Recruitment in Perspective Differences of Social & Emotional Engagement -

Source: Schilbach *et al.* (2013: 396, Fig. 1)

**Fig. 3.2** above shows a schematic representation of differences in neural recruitment for different perspectives of social and emotional engagement. The four cells depict different neural networks activated when interaction is experienced from (A) a detached observer position, (B) a detached observer position with emotional engagement, (C) an interactively engaged position *without* emotional engagement, and (D) an interactive engaged position with emotional engagement. Brain imaging studies use different methodologies when studying social cognition, and those measuring subjects from (A) detached observational position will detect a different set of neural components and networks than if the subject were sharing intersubjectively in interaction (C). Similarly, engaging emotionally recruits still other neural networks, making brain imaging study results dependent on methodological design and subject perspective.

*“advanced levels of social cognition may have arisen as an emergent property of powerful*

*executive functioning assisted by the representational properties of language. However, these higher levels operate on previous levels of organization, and should not be seen as independent of, or conflicting with one another. Evolution has constructed layers of increasing complexity, from non- representational (e.g., emotion contagion) to representational and meta- representational mechanisms (e.g., sympathy), which need to be taken into account for a full understanding of human empathy.” Decety & Lamm (2004: 9)*

Second-person engagement, however, “demands that emotion be taken as central to an awareness of minds and focuses on emotional responses rather than reflections or constructs” (Schilbach *et al.*, 2013). Such engaged interaction can activate natural empathic feeling through social and emotional engagement. However, human empathy refers not to a simple phenomenon, but to a construct involving social and emotional aspects in “the interaction between emotional awareness, empathic concern and affective arousal...which depend on a number of interacting and partially dissociable neurobiological systems” (Decety & Svetlova, 2011: 3). The intersubjective emotional awareness of empathy comes from the experience of another’s emotional states triggering similar states in the observer, thought to involve a mirror neuron system (MNS) analogous to that found in the sensorimotor system in which the observer’s corresponding neurological sensorimotor system activates as if they are pantomiming the action, giving the system Self-Other sharing properties (Decety, 2011). However, the MNS is also found to be heavily recruited in preparing complementary actions to another’s social signaling, rather than simply mimicry (Schilbach *et al.*, 2013).

Second-person engagement also results in joint attention often involving gaze-following, either in a “responder” or “initiator” role, depending on whether one responds to another’s gaze or directs the other’s gaze. These two roles recruit the mentalizing system (MENT) “overlapping with the Default Mode Network (DMN),” where social actors are “simply and naturally coordinating their gaze with that of the other without any explicit instruction” (Schilbach *et al.*, 2013: 403). Activity in the MENT appears in very young children engaged intersubjectively “long before” the age in which they exhibit explicit, reflective social understanding of other minds, hinting the mentalizing network is engaged in implicit social processes which may later be reused by explicit processes (Schilbach *et al.*, 2013). Later differences between implicit and explicit social cognitive processes may result from “differences in the functional or effective connectivity between individual brain regions, rather than functionally segregated effects” (Schilbach *et al.*, 2013: 403). However, there are important neurological

differences between the role of responder or initiator in second-person engagement, where being the initiator seems to recruit the reward center producing positive feeling, implying “that social interaction may involve collaborative and affiliative *motives*, the realization of which is experienced as rewarding” (Schilbach *et al.*, 2013: 403). Thus, deficits in the reward center could affect the degree to which appetitive motivations for initiating social interaction are experienced.

The person perspective from which one is either subjectively imagining, objectively observing or interactively engaged may have important effects upon the processing of social cognition for each recruit different neural circuitry (Schilbach *et al.*, 2013), as in **Fig. 3.2** above. Observational perspectives tends to rely more on situational-*independent* social cognition, where “psychological traits or dispositions influence evaluation of others,” while interpersonal perspectives tend to rely on situational social cognition, such as the reaction of others with which one is engaged (Schilbach *et al.*, 2013: 407), which the actor-observer bias reflects.

Schilbach *et al.* (2013) suggest that while it is assumed that Autism includes deficits in implicit social cognition, a number of studies have shown neither “impaired explicit social cognition” nor “capacity of implicit learning in general” (Schilbach *et al.*, 2013: 411). Rather, impairment seems to stem from difficulties of “automatic integration of social information” from implicit processes which transmit affective information giving situational context (Schilbach *et al.*, 2013). Other clues pointing to contextual integration of social cues are found in characteristic language abnormalities in semantics and pragmatics deficits, where language processing of dialogue includes monitoring of “paralinguistic cues” and interpersonal synchronization (Schilbach *et al.*, 2013: 413). Also important would be to investigate the role of reward signals upon situational context during engaged interaction, as second-person initiator roles recruit neurological reward centers while third-person observational perspective do not (Schilbach *et al.*, 2013).

Evidence from Mirror Neuron System (MNS) dysfunction studies has been offered as the source of the social cognitive difficulties of autism (Iacoboni & DaPreto, 2006). Several studies have shown for autistic individuals that “temporal progression of activation in the core circuit for imitation is delayed,” reflecting “a deficit in functional connectivity of brain regions involved in MNS” (Iacoboni & DaPreto, 2006: 949). Bilateral EEG measurements show that mu rhythms, occurring at similar frequency as alpha rhythms (8-12 Hz) although perpendicular to, are suppressed when executing or

observing goal-directed action, generally taken to indicate the activity of motor activation ( $\mu$ ) or MNS activation ( $\alpha$ ) (Iacoboni & DaPreto, 2006). While action observation/imitation  $\mu$  rhythms show similarity between left and right hemispheres, TMS studies show lateralized differences with left hemispheric responses to auditory stimuli from action, suggesting human multimodal (visual, auditory) MNS existing only in the left hemisphere, while the right hemisphere is visual MNS only (Iacoboni & DaPreto, 2006). Since language strongly recruits the left hemisphere, left lateralized MNS processes in other modalities that experience delays, such as audial processing of “paralinguistic cues,” might be detectable by differences in  $\alpha$  rhythms. However, the particular deficit of the MNS affecting autism seems to be not in mirroring *per se*, but in the motor preparation for “complementary or incongruent actions rather than imitative or congruent ones” typical for many “actions performed jointly” (Schilbach *et al.*, 2013: 401), such as preparation of the next thing to say in a conversation.

While much research has focused upon autism’s impairments of social cognition, it must be recognized these are compared to the normative view of social cognition. Schilbach *et al.* (2013) observe anecdotally that autistic individuals self report “not having any significant impairments of social interaction and communication when they interact with other persons diagnosed with autism,” offering that greater public awareness of autism’s unique mode of social cognition would provide for “flexibility and openness for a diversity in styles of social interaction” (Schilbach *et al.*, 2013: 413). While social cognitive deficits are characterized as impairments clinically, these may in fact represent variance across the spectrum of functional divergence between high level brain systems, for which extreme modes provide evolutionarily selected abilities that benefit groups at a cost to individuals (Sober & Wilson, 1998).

When autistic behavioral traits cause problems in life, autism can be diagnosed according to the DSM as Autism Spectrum Disorder, although Autism Spectrum Condition (ASC) is sometimes a more accurate term (Baron-Cohen, 2008). While the disorder diagnostic only identifies outliers, Autism Spectrum Condition represents a spectrum spanning not simply autistic individuals with extreme “deficits” of “normal” brain functioning, but also one spanning high to exceptional functioning in other domains as compared to “neurotypicals” (Baron-Cohen, 2008: 14). ASC can be screened by an Autistic Spectrum Quotient (AQ) self-report questionnaire coming in several different versions to measure child, adolescent, and adult behavioral traits commonly associated with these conditions,

although disorders must be diagnosed by clinicians (Baron-Cohen, 2008). Almost all individuals will score some autistic traits on the AQ, with individuals have an ASC diagnosis scoring with more traits (Baron-Cohen, 2020). ASC diagnoses don't apply over all of life, but represent "snapshots" of a particular time in life when the symptoms make life difficult, which can be lessened over a lifetime through improving core social skills (Baron-Cohen, 2008). Over the course of development, autistic persons display strengths and weaknesses in acquiring social and communication skills (Mundy & Sigman, 1989).

Autism Spectrum Condition expresses itself across a wide variety of behavioral traits, which can occur in various combinations since it is a spectrum disorder. ASC is found to have a strong genetic component (Baron-Cohen, 2008) and an origin in the early prenatal development of the "systems that program timing, serial coordination and prospective control of movements, and that regulate affective evaluations of experiences" (Trevvarthen & Delafield-Butt, 2013: 11). A unique set of behavioral, sensational, and cognitive differences from "typical" brain function emerge from the dynamics of neural developmental differentiation, with regards to social perception and person perspective taking (Baron-Cohen, 2008). These arise in domains that make up parts of motor functioning, social communication and cognitive thinking styles, including specific "**motor traits** (e.g. non-right-handedness, dyspraxia, tip-toe walking), **repetitiveness traits** (e.g. repeated watching same movie/eating the same food/wearing the same clothes, routines & rituals, obsession with systems), **language** (e.g. delay, echoalia, syntactic talent, literalness, poor pragmatics), **social traits** (e.g. frequent faux pas, no pretend play, unusual eye contact, turn taking difficulties, lack of reciprocity), and **cognitive traits** (e.g. truth-seeking, difficulties in big picture planning/generalizing/multitasking, high penchant for lists/cataloguing/memory for facts/musical talent/collecting/, Sensory hypersensitivity)" (cf table 5.4 in Baron-Cohen, 2008: 77-83).

Baron-Cohen (2008) compares and critiques five other psychological theories with his own, each of which attempt to explain Autism by finding the causal factors for different sets of these behavioral traits (pp. 51-84). The executive dysfunction theory (EF) posits that behaviors stuck in repetition are due to deficits in prefrontal development and inability to shift attention, but EF suffers from not being able to explain differentiation on the ASC spectrum, as some autistics perform well on tests and their specialized hyper focused narrow interests in subjects are what develop into expertise (Baron-Cohen, 2008). Weak Central Coherence (WCC) theory posits that Autism is due to the inability to

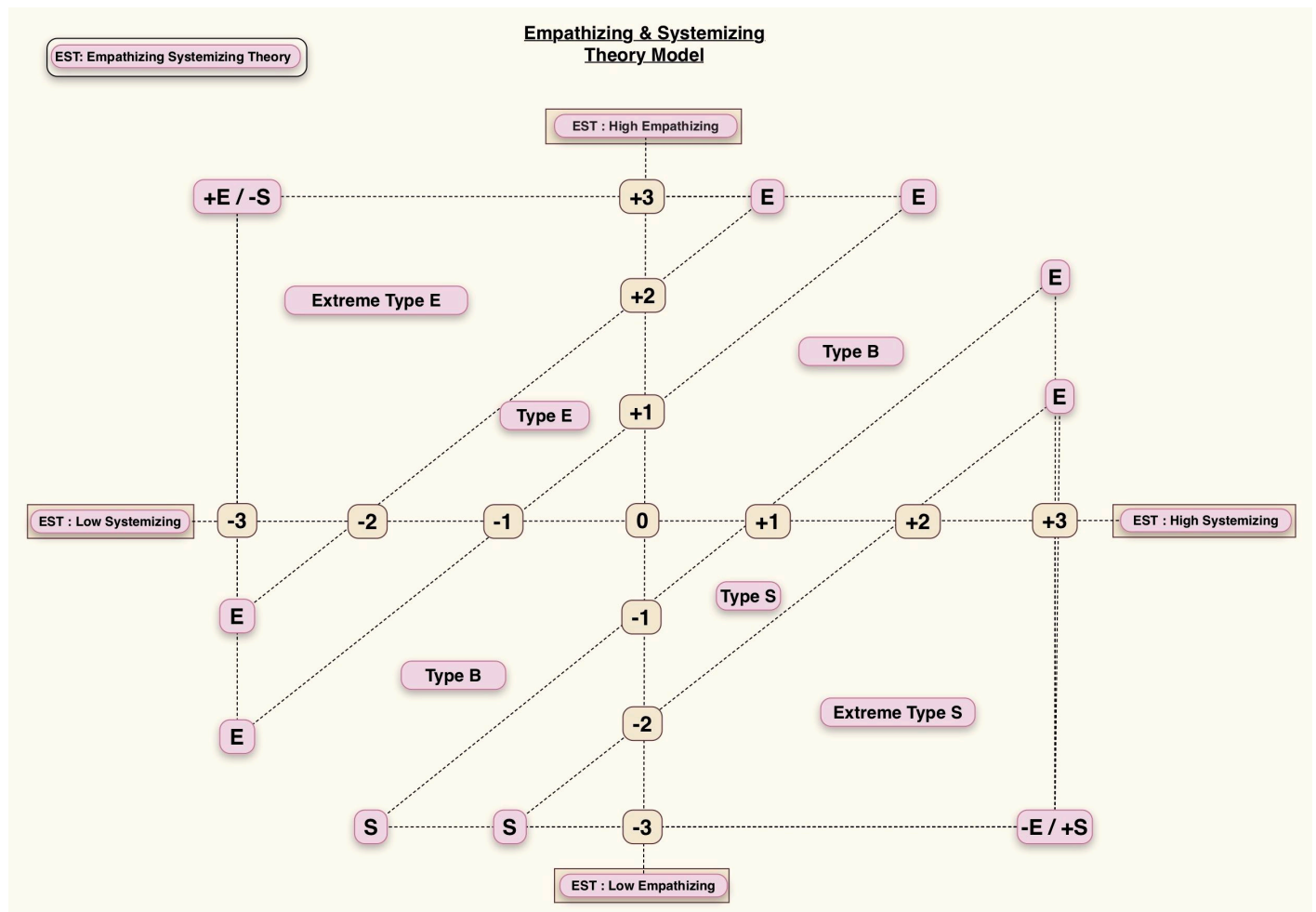


take coherent, globalized views, getting “stuck” in the details in which autistic people have high ability to attend to small details and may take longer to connect these to larger contexts, although it suffers “by implying” that autistics “cannot see the whole, which cannot be true” (Baron-Cohen, 2008: 55). Mind blindness theory describes autism as resulting from a delay in forming a theory of mind (ToM), “sometimes called mind reading or mentalizing” (Baron-Cohen, 2008: 57). ToM makes sense of social communication problems experienced by autistic individuals, but suffers from perhaps not being specific to ASC, as other clinical conditions show mind blindness (i.e., narcissistic or borderline disorders). Finally, Baron-Cohen (2008) offers Magnocellular theory, which posits Autism is caused by a specific visual pathway in the brain which doesn’t allow for accurate prediction of visual movement for autistics. However, Magnocellular theory again suffers from not characterizing the spectrum and only focusing on visual modality, while the other senses are clearly affected in ASC.

While Baron-Cohen offers suggestions of how these theories can be improved by integrating aspects of others such as Hypersensitivity to Sensation and Monotropism theory, his own theory casts a wide breadth to account for each of these theories, to show that ASC can be shown to emanate from two underlying psychological causal factors: **Empathizing** and **Systemizing** (Baron-Cohen, 2008). The Empathizing dimension is composed of a cognitive empathy component that involves ToM and “mindreading” to understand others’ intentions and predict others’ behaviors and an affective empathy component that relates to having the appropriate emotional response to another person’s thoughts or feelings (Baron-Cohen, 2008). The Systemizing dimension is related to the ability to analyze or construct systems which are defined by rules which govern the system in order to predict how the system will behave (Baron-Cohen, 2008). Systemizing can occur across various types of systems: collectible, mechanical, numerical, abstract, natural, social, and motoric (Baron-Cohen, 2008).

The intersection of Empathizing and Systemizing give a spectrum across which five different “brain types” emerge, an example of neurodiversity and of types that “have evolved to thrive in different environments” (Baron-Cohen, 2020: 101). ASC is characterized by high levels of Systemizing and deficits in empathizing (Baron-Cohen, 2008), although most people tend to have brains specializing in either Systemizing or Empathizing. As measured by the Empathizing Quotient (EQ) (Baron-Cohen & Wheelwright, 2004) and Systemizing Quotient (SQ) (Baron-Cohen & Wheelwright, 2003)

self-report questionnaires, scores for EQ and SQ tend to be inversely related as individuals in which Systemizing and Empathizing are balanced account for only about 30% of test subjects, another 30% have stronger Systemizing capabilities, approximately another 30% stronger Empathizing capabilities, while the extremes of the spectrum are small percentages who are either hyper-empathizers (4%) or hyper-systemizers (6%) (Baron-Cohen, 2020).



**Fig. 3.3** - Empathizing & Systemizing & the Five 'brain types' - Source: Baron-Cohen (2008: 73, Fig. 5.10)

The variance in **Fig. 3.3** across E/S dimensions cluster into five mind types of various capabilities of Empathizing and Systemizing. The axis ticks (-2, -1, 0, 1, 2) represent standards of deviation, meaning type areas are not to scale as the zero deviation would have the largest area and the extreme types the smallest. Type E are those people whom have higher empathy than Systemizing ( $E > S$ ) while Type S higher Systemizing than empathy ( $S > E$ ). Type B are those who have a balance (high or low) between Empathizing and Systemizing. Extreme Type E represents people who are highly oriented towards

Empathizing, but with some challenges with Systemizing ( $E \gg S$ ), while Extreme Type S represents people who are above average Systemizing with some challenges with empathy ( $S \gg E$ ). Virtually all autistics people fall under 'male brain' types ( $S > E$ ), the bottom right corner (Baron-Cohen, 2008).

The Extreme Male Brain (EMB) theory (Baron-Cohen, 2002) posits ASC brain types resemble extreme male brain types, characterized by larger Amygdala and smaller ACC among other male-female differences (Baron-Cohen, 2008). Evidence from scores of large worldwide samples on the AQ, SQ, and EQ support the EMB, in that the mean score for females is significantly higher on the EQ than males while the inverse holds as males score significantly higher on SQ than women, while individuals having ASC have the highest mean scores on AQ, SQ, and lowest on EQ (Baron-Cohen, 2020)..

The Empathy construct can be characterized as the “sense of similarity in feelings experienced by the self and the other, without confusion between the two individuals,” which when “confused” can lead to two different types of behavioral responses (Decety & Lamm, 2009: 941). Sympathy describes “(empathic) concern for another based on the apprehension or comprehension of the other’s emotional state or condition,” while personal distress describes, typically, an emphatic “aversive self-focused emotional reaction to the apprehension or comprehension of another’s emotional state or condition” (Decety & Lamm, 2009: 941). Both emphatic concern and personal distress are aspects of emotional empathic reactions to the misfortune of others, both of which tend to be automatic and unconscious (Goldman, 2011). These lead to two very specific response patterns in that sympathetic concern is associated with prosociality (helping) from an underlying “other-oriented, altruistic motivation,” while personal distress “leads to a self-oriented, egoistic reaction” (Decety & Lamm, 2009: 942).

The ability to flexibly adapt to and deal with stressful interaction defines Ego-Resiliency, a heritable constitutional trait “associated with differential reactivity in specific affective regions in the brain” (Alessandri *et al.*, 2014: 3). Ego-resiliency’s relations to prosociality has been studied in conjunction with Effortful Control, a “supra ordinate construct” defining the deliberate control functions (eg, attention, planning) required for voluntary and goal-directed behavior (Alessandri *et al.*, 2014). It has been found that individuals high in effortful control are generally predisposed to experience sympathy (i.e., an other-oriented response to another’s emotion or condition) rather than

personal distress (i.e., a self-focused, aversive response to another's emotional state or condition) when exposed to cues regarding another's emotion or negative state (Alessandri *et al.*, 2014). However, effortful control mediates this pattern of sympathetic or personal distress empathetic reaction indirectly through ego-resiliency, such that failures of effortful control lessens ego-resiliency and lead more frequently to self-focused dispersal of personal stress (Alessandri *et al.*, 2014).

These psychological constructs, as well as the clues above regarding the neurological differences in functional connectivity of MENT and MNS in autism, could point to a neurological locus for the social cognitive effects (Uddin & Menon, 2009). Autism has been correlated with the hypoactivation of the neural circuit identified as the locus of emotion awareness of self and others (cf Craig, 2009), "integrating internal states with external sensory stimuli" specifically located in the right hemisphere (Uddin & Menon, 2009). Specifically, autistic individuals have shown decreased activation in the right inferior frontal gyrus (IFG) processing novel facial stimuli when compared to controls (Uddin *et al.*, 2008). The right IFG is implicated as the first region to activate when presented with a novel or salient stimuli for preparing an orienting response (Tops *et al.*, 2014).

As reviewed by (Schilbach *et al.*, 2013), different neurological circuits and large scale systems are recruited depending upon perspective, in the level of engagement or interaction ranging from observational to intersubjective. As will be covered later below, controls of large scale brain systems focus in on this same neural circuit, dubbed the Salience Network (Uddin & Menon, 2009), central to switching between an internally focused mentalizing mode and externally focused socializing mode. The differences in focus between these modes would then reflect different information processing styles, manifesting in differences in social cognition and related cognitive biases affecting cognitive, affective, social and sensory domains.

One study of young autistic children involving three types of motor imitation with objects, while not explicitly stating their deliberate exploration of perspectival differences, have found that different foundational predictors of motor imitation are salient depending upon the perspective in which an imitation task is presented (McDuffie *et al.*, 2007). These mirror three of the four cells of **Fig. 3.2**, in which brain network recruitment contingencies depend upon on different fundamental aspects of both interaction and engagement (Schilbach *et al.*, 2013). Study design compared motor imitation tasks from (a) an detached observational perspective from an observed a video record of object

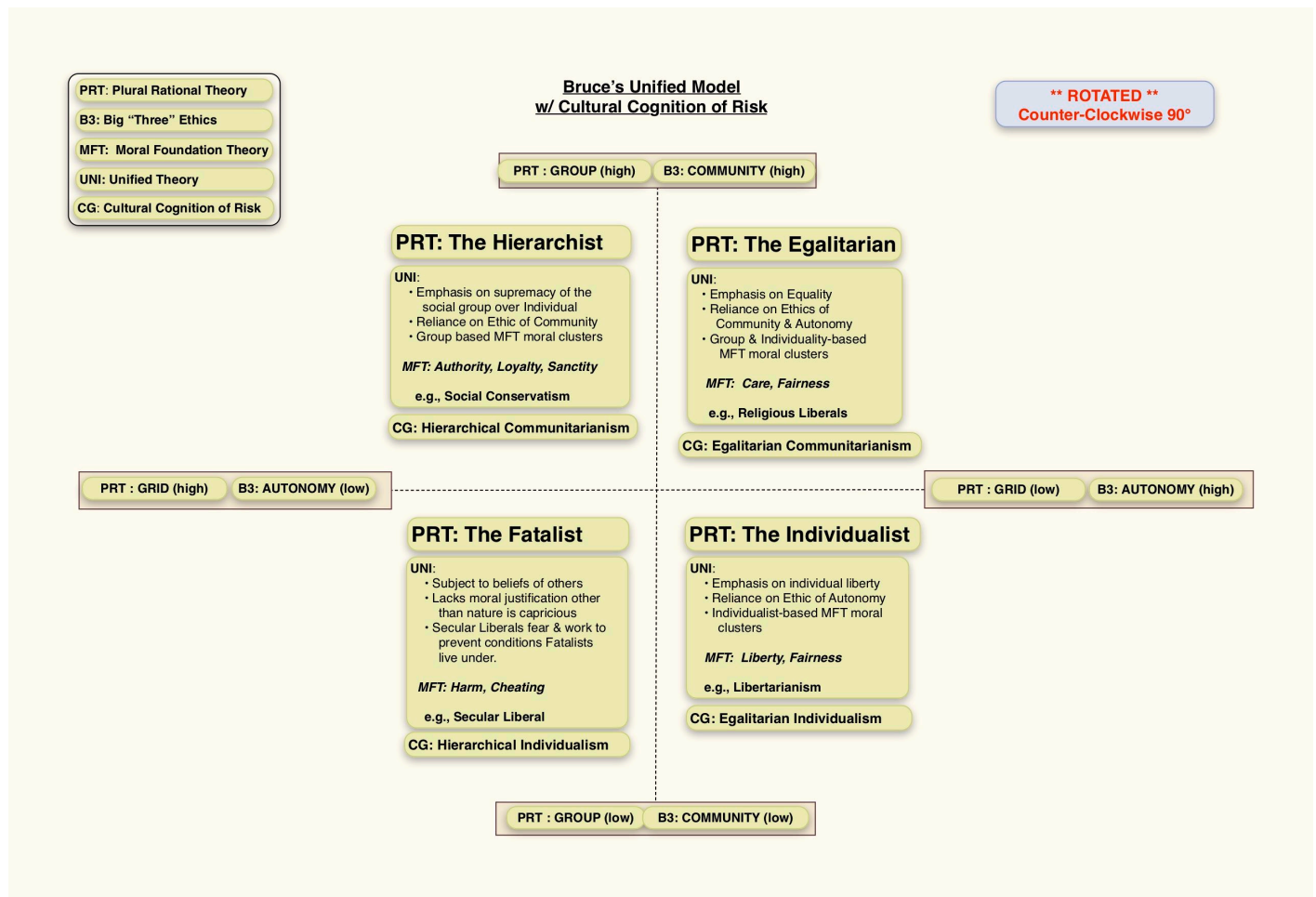
manipulations, **(b or d unclear)** an interactional perspective engaged with a tester manipulating object, and **(c)** a directed elicitation observational perspective in response to a tester (Schilbach *et al.*, 2013). Directly elicited imitation was significantly correlated with attention-following; interactive play was significantly correlated with social reciprocity; while observational play significantly with correlated with both attention-following and non-imitative fine motor ability (McDuffie *et al.*, 2007: 401). These differences may be attributed to differential neural recruitment of brain networks, not only in which are activated, but also the pattern of ordering between network switching during the phases of elicitation, interaction, and observational imitation.

The study of the extremes of spectrums can help to reveal clues about the underlying dynamics of systems, as well as the dynamics of top-down and bottom-up processes. The E-S/EMB helps not only to understand the etiology of ASC, but also its relations to differences between genders in Empathizing and Systemizing. Importantly, ASC demonstrates that spectrum disorders resulting in differential deficits and abilities across a spectrum of neurological differences from the 'neurotypical brain type,' may be overcome through early recognition of deficits of early predictors and therapeutic techniques to build foundational building blocks of social and emotional interaction (Baron-Cohen, 2008).

While, the two dimensions of Empathizing and Systemizing show the familiar quadrant pattern when graphed, they cannot yet be directly matched to the Warmth and Competence dimensions of the SCM. There is similarity in the vertical dimension Empathy, although the E-S/EMB characterizes only emotional expression empathy (Baron-Cohen, 2008) while the SCM contains both cognitive and emotional empathy, perceived not expressed. Furthermore, it is not entirely clear in which direction Systemizing would align with SCM's competence dimension. However, as will be covered by this study below, feelings, empathy and uncertainty have a common neurophysiological locus (Singer, Critchley, & Preuschoff, 2009).

The Warmth & Competence dimensions of the SCM can be mapped directly to the dimensions at the cultural level, which measure Group/Community and Grid/Autonomy respectively, since warmth measures the degree to which we like another group in regards to social interaction, while competence measures the degree to which we respect their ability to act. However, the Unified Cultural model is oriented with Grid running vertically and Group running horizontally, while the

SCM dimensions of warmth and competence orient warmth/coldness (Sociability) vertically and competence (Status) horizontally. To match these two models, the Cultural model can be rotated by **90°** counter-clockwise, so that high Group and Warmth (Sociability) are atop the Y-axis, bringing the two models into alignment for high level comparison.

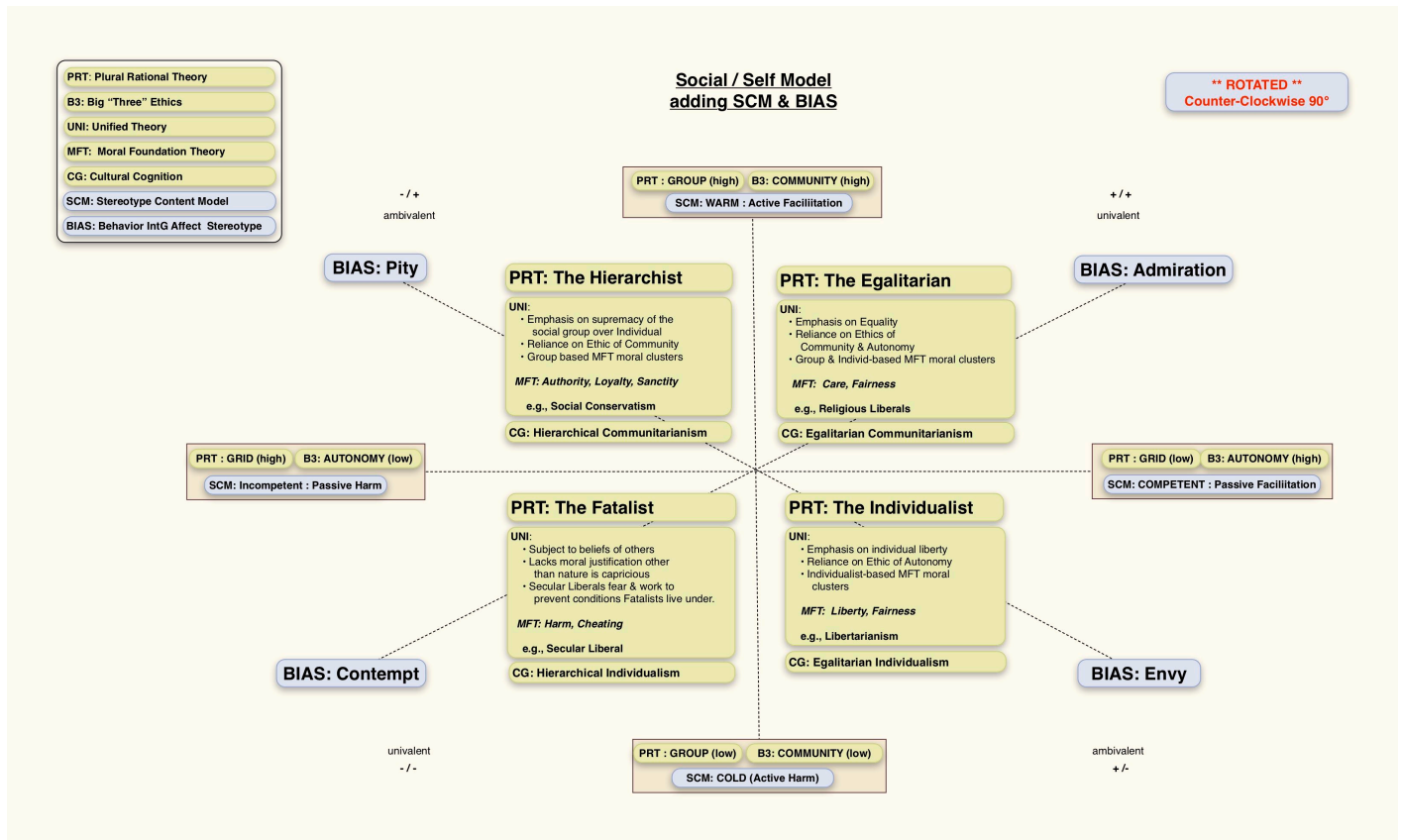


**Fig. 3.4** - Unified Cultural Model rotated **90°** counter-clockwise

Re-orienting Group/Community/Sociability vertically along the y-axis will make alignment with subsequent Social, Physiological and Psychological analytical models congruent. Additionally, the two dimensions differ in their focus, with the Group/Community/Warmth dimension really relating to the **Social**. The Grid/Autonomy/Competence dimension focuses on the agentic **Self**. As will be shown, these two dimensions are representative of a general dynamic found across levels, representing two universal dimensions which are used to evaluate the social and our selves defining a social motivational plane. This study will explore other analytics at different levels of human study that pattern in this same manner and add them to this model, which can be considered sort of a

whiteboard to compare models and to recognize similarities of patterning within quadrants and across levels.

This study will refer to this growing IToCE model as the **Social Self Model**, which adding the SCM axes and the BIAS emotion diagonals yields **Fig. 3.5** below:



**Fig. 3.5** - Social Self Model adding Stereotype Content Model & BIAS

# CHAPTER FOUR

## Social Relational Models

*“Relational Models Theory is simple: People relate to each other in just four ways. Interaction can be structured with respect to (1) what people have in common, (2) ordered differences, (3) additive imbalances, or (4) ratios. When people focus on what they have in common, we call that **Communal Sharing**. When people characterize some aspect of an interaction in terms of ordered differences, the model is **Authority Ranking**. When people attend to additive imbalances, they are framing the interaction in terms of the **Equality Matching** model. When they coordinate their actions according to proportions or rates, the model is **Market Pricing**. Everyone uses this repertoire of relational capacities to plan and to generate their own action; to understand, remember, and anticipate others; to coordinate the joint production of collective action and institutions; and to evaluate their own and others’ actions. In different cultures, people use these four relational models in different ways, in different contexts, and in different degrees. In short, four innate, open-ended relational structures, completed by congruent socially transmitted complements, structure most social action, thought, and motivation. That’s the theory.” Fiske (2004a: 3)*

A theoretical framework which influenced Haidt’s Moral Foundations Theory comes from cultural anthropology, Alan Fiske’s Relational Models theory (RMT) which posits that “people are fundamentally sociable” and organize their social relations according to “abstract templates” or “models” which underlie the elemental psychological foundations of social exchange from which all social interactions are composed (Fiske, 1992). Communal, Ranking, Matching, and Pricing don’t simply model dyadic interaction, but serve to plan, coordinate, anticipate and make understandable behavior in a set of common “languages” which can be used in combination or interchangeably. They help to make sense of complex social relations “in the process of seeking, making, sustaining, repairing, adjusting, judging, construing, and sanctioning relationships” (Fiske, 1992: 689). They are distinct structures which represent “mutually exclusive alternatives in the orientation of any person at any given moment with regard to any one aspect of any particular level of interaction in any given



domain” (Fiske, 1992: 710).

Communal Sharing (CS) is a social relational pattern where group members treat each other as undifferentiated equals. CS relationships emerge from a shared common identity and produces high social unity, conformity to ritual, consensus decision making, and distribution according to need. The prototypical CS relationship is between close kin or friends, but also is found in groups in which an aspect of identity is particularly salient and shared in common, such as ancestry, ethnicity, nationality or race. CS uses a categorical measurement type, in that the group membership and “relationships ordinarily involve kindness, in both senses of the word: people are kind to people of their own kind, prototypically their own kin” (Fiske, 1992: 699). The conformity of individuals towards group consensus and collective identity occurs through “social proof and imitation to describe this tendency to change one's attitude to correspond to the attitudes of similar others” (Fiske, 1992: 697). A malformed version of CS occurs during an attack on a shared identity, which results in a polarization between the subjective “we” and objectified “they”, which can spiral towards evaluating in-group members as good or chosen, while outsider “others” are labeled bad, defiled, or worse (Fiske, 1992). Kin selection according to inclusive fitness is hypothesized to be the natural selection mechanism of CS (Fiske, 1992).

Authority Ranking (AR) is a social relational pattern where group members are differentiated and ranked according to a hierarchy. AR relationships produce a distribution of people over a rank system that requires deference, subordination, and respect from low-rank for those of higher-rank, while those of higher-rank have an obligation to be generous towards and protect those of lower-rank. A linear-ordering emerges in such social structures as chain of command, redistribution networks sending goods “upwards” towards a central authority, or dominance hierarchies. The AR measurement scale is ordinal (counting), providing a different logical type (Bateson, 1982) than CS's categorical measurement, integrating the lower level of categorization into an ordered lineal rank. AR provides a strong group structure binding people through multiple levels of hierarchy and stratification, although some AR cultures display a flatter hierarchy limited to the extended family unit where rank is based on gender and age (Fiske, 1992: 701). AR emerges from “hierarchical social relations in the medium of a social physics where space, mass, time and force function iconically to represent and create rank” (Fiske, 2004b: 94). The AR natural selection mechanism relies on the “adaptive value of submission and dominance behaviors in a linear hierarchy” (Fiske, 1992: 696).

Equality Matching (EM) is a social relational pattern where group members are co-equal peers according to an egalitarian model. EM produces egalitarian relationships through balanced reciprocal exchange, where contributions towards others are tallied and imbalances are tracked. The EM measurement scale is an interval (ordered Abelian field), where differences are enumerated to determine a quantitative amount of imbalance, “which can lead to AR structures when initial distributions are unequal” (Fiske, 1992: 705). EM social relations organize around turn taking, balanced in-kind reciprocity, equality and trust as a way of establishing socially balanced relationships with strangers or reestablishing relationships with enemies. Social exchange, work, material goods and distribution are all centered around like for like and equality, while decision making resembles one-person, one-vote. The EM natural selection mechanism operates as ‘tit-for-tat’ in-kind reciprocity (Fiske, 1992).

Market Pricing (MP) is a social relational pattern particularly oriented towards organizing work and occupational identities. MP produces proportional exchange standards for contributions and distributions based on the logic of the market extended across society, where rewards are offered in proportion to productivity. The MP measurement scale is a ratio (Archimedian ordered field), where differences are compared through distributional and ratio of input and output. Such measurements are conducted using abstract symbolic representation of figures, prices, and common ratios to determine cost-benefit, profit-expenditure, and risk-return. MP can be seen as a “social influence device” producing heuristic errors when people are manipulated to believe there exist a “scarcity of goods, limited time for choice, or competition” (Fiske 1992: 707). MP also provides the rationalization for such pathological forms of exchange such as “prostitution, capture and sale of people into slavery, the killing of indigenous inhabitants to open land up for economic exploitation, child labor, and colonial systems of forced labor” as well as “Mercantile wars fought for markets and sources of raw materials...drug dealing, loansharking, and extortion” (Fiske, 1992: 708). The MP natural selection mechanism emerges from abstract symbolic representation, a distinctly human domain (Fiske, 1992).

Relational models (RMs) are the source of social intuition from the externalization of “innate cognitive models (which) manifest themselves as part of normal maturation” (Haidt, 2001: 19). Moreover, the first three of these models are shared with some other species, having been observed

in primate research and several other social species (Haidt, 2001: 18). The fourth model (MP), however, represents the only truly uniquely human form and provides “a moral Rubicon that only Homo Sapiens appear to have crossed: widespread third party norm enforcement” (Haidt, 2001: 18). The four RMs are though to be learned in the “same sequence in which the models appear to have emerged phylogenetically in the mammalian and primate lineages” (Haidt, 2001: 19).

#### **Four Social Relational Models Manifestations & Features**

	Communal Sharing (CS)	Authority Ranking (AR)	Equality Matching (EM)	Market Pricing (MP)
<b>Decision Making</b>	Group Consensus	Chief Decides & Delegates	Voting	Market Mechanism
<b>Group Organization</b>	all pitch in without assignments	orders down a chain of command	everyone do an equal share	compensation depending on proportion
<b>Social Influence</b>	Conformity	Obedience	Compliance	Cost & Benefit Incentives
<b>Social Identity</b>	Membership in a Natural Kind	Social Rank	Co-Equal Peer	Occupation or Economic Role
<b>Natural Selection Mechanism</b>	Kin Selection	Dominance / Submission Adaptiveness	"Tit-for-Tat" In-Kind Reciprocity	Specialization & Commodity Exchange
<b>Relational Structure</b>	Equivalence Relation	Linear Ordering	Ordered Abelian Group	Archimedean Ordered Field
<b>Measurement Scale Type</b>	Categorical or Nominal	Ordinal	Interval	Ratio
<b>Significance of Time</b>	Relationships idealized as Eternal Perpetuation of Tradition	Sequential Ordering by Rank Temporal Priority to Superiors	Oscillation of Reciprocation Synchrony of Action	Calculus of Rates of Interest/Return/Pay Efficient use of Time
<b>Relationship Marking Mode</b>	Enactive, Kinesthetic, Sensorimotor Rituals	Spatiotemporal Ordering	Concrete Operations	Abstract Symbolic Representation
<b>Constitutive Media</b>	<b>Consubstantial Assimilation</b> Birthing, Nursing, Food Sharing, Ritual Synchronization, Movement, Shared Pain	<b>Social Physics</b> Above, In Front, Earlier, Larger, More Numerous, Greater Force	<b>Concrete Operations</b> Turn taking, In-kind Reciprocation, 1:1 Correspondence, Balance, Alignment	<b>Arbitrary Signs</b> Money, Propositional Language, Writing, Numbers & Math, Digital Accounts

**Fig. 4.1** - Four Social Relational Model Manifestations & Features -

*Source: Fiske (1992: 694-696)*

RMT provides a condensed summary of the manifestations and features which summarize the extensive cross-cultural research of each relational Mod (**Fig. 4.1**), allowing for comparisons across different modalities and analytics (cf Fiske, 1992: 694-696). Rai & Fiske (2011) offer that “literature in social, cognitive, and evolutionary psychology suggests moral psychology may be inseparable from its social-relational context” (p. 59) and propose a theory of moral psychology based on relationship regulation. The RMs (**Fig. 4.1**) represent fundamentally different logics for managing social relationships (Fiske, 1991).

The measurement types for each Mod correspond to one of the four classical scale types of measurement (Stevens, 1946) that were discovered in the attempt to find the fundamental laws governing the formal measurement of sensation. These scale types represent four distinct, isomorphic numerical transformations which serve as a model for ways of sorting or ordering equal objects within a set, with each scale type building upon and reordering the previous type in increasing complexity: nominal, ordinal, interval and ratio. The measurement scale type logic provides a hierarchical ordering of the Mods underlying many of these manifestations and features in

**Fig. 4.1**, and appears to differentiate across many different psychological domains, including concepts of time, decision making, relation to the self, moral judgment and ideology, moral interpretations of misfortune, and perhaps most tellingly with respect to social development, characteristic mode of marking relationships (Fiske, 1991). Applied to the social relational logic, the scale types represent different orderings of people, with each successive scale type re-ordering the previous according to some additional property of the set.

The **nominal** or categorical scale type represents sets whose members are equivalent according to some categorization of a natural kind. Communal Sharing (CS) shares this nominal type of social conception of natural kind in a logic of society regulated by who's in the group (*categorically* alike, aka, kin) versus who's not. Examples would be people in the same kin group or whom share the same ethnicity, where all members are treated as part of the group entitled to community. The **ordinal** scale type represents sets whose members are ordered or ranked according to some category. Authority Ranking (AR) shares this ordinal scale type in its social logic of society regulated by social physics (bigger, stronger, more authority) rank hierarchy. This would look like the hierarchies tied to power according to wealth, social rank, beauty, occupation, education, etc. The **interval** scale type represents sets in which differences between members are compared for equivalence such that the magnitude of difference between rank is a quantity. Equality Matching (EM) shares this interval scale type in its social logic of society regulated by balances of social exchanges (accounts of owing or giving assortive individuals). This would look like the attention paid to the accounting of social debts, where favors exchanged are tracked compared, and influence relationships. The **ratio** scale type represents sets in which differences between members an interval set vary in their proportion between members. Market Pricing (MP) shares this ratio scale type in its social logic of society regulated by balances for social exchange based on abstract medium (money, trade among strangers). Socially, this manifests most simply in the wage rates different professions command according to many factors. It would also manifest in commodity exchange, where valuations of products are ratios of some common standard (money).

The difference in scale types makes comparison between RMs ambiguous, as there is no common currency between RMs, (e.g., authority & rank (AR) are not convertible to money (MP), while love (CS) cannot be bought (MP)) (Fiske, 1991). Following that scale logic, the social Mods are similarly related hierarchically in their reordering of ways in which social others ordered within the set. The

Relational Mods are hypothesized to emerge during development in the sequence CS -> AR -> EM -> MP, following the hierarchical logic of scale types (Fiske, 1994). This progression also resembles the temporal progression of childhood cognitive developmental theories of Piaget (1932) and Kohlberg (1981) which will be reviewed later (i.e., Sensorimotor => Spatiotemporal ordering => Concrete Operations => Abstract Symbolic representation).

*“People generate, interpret, and judge social relationships with reference to the models, enforce them on others, sanction transgressors, and adjust their relationships with others to take account of whether these third parties conform to the models. The motivational and directive quality of the models can be seen as the human proclivity to relate to people in these modes, also reflected in the emergence of the models and the people’s facility at recognizing them and learning their implementation rules. People are ‘prepared’ and attuned to find and participate in these forms of social relations, to create them, and to insist on them.”*

*Fiske (1991: 195)*

The RMs represent the elemental relational building blocks upon which all social relations are built, as “these four and only these four,” have been discovered to be operating across many different societies studied (Fiske, 1992), although other forms cannot be theoretically ruled out (Haslam, 1994). However, abstract models of dyadic relationships show “the RMs constitute an exhaustive set of coordinated dyadic social relationships” (Favre & Sornette, 2015: 2). Additionally, two cases exist which represent exceptions in social relations to RMs as “people sometimes act without regard to any social relationship...acting towards others as if they were not there” (Fiske, 1992: 19). Termed Asocial and Null interactions, these are non-coordinated and non-relational interactions, respectively. Asocial interactions occur as people “pursue their own goals without regard to their own social models or those of the others around them” (Fiske, 1992: 19). Null interactions represent non-relational situations where people simply ignore each other and do not interact, such as people passing each other on busy streets. These two exceptions represent limiting cases which provide exceptions to the RMs of cooperative, social relations.

Favre & Sornette (2015) offer a proof that the basic set of abstract realizations of social interaction within dyadic relational actions provide a finite and definite set. These are a set of six mutually exclusive, idealized interactions in which actors engage in the same action, different actions, or doing

nothing at all. These are termed action fluxes, which refers to a pattern of behavior where roles may be simultaneous enacted by both actors, be exchangeable and non-exchangeable, or the actions can be null (no response). It creates the following list of categories which match Relational Models Theory.

**Table 3. Six categories of action fluxes**

Category	Fluxes characteristics	Representative relationship	Alternative notations	RMT
	Identical actions			
1	Non-null actions	$A \overset{X}{\rightleftarrows} B$	$A \overset{Y}{\rightleftarrows} B$	EM
2	Null actions	$A \overset{\emptyset}{\rightleftarrows} B$		Null
	Different actions			
3	Non-null actions, exchangeable roles	$[A \overset{X}{\rightleftarrows} B \text{ and } A \overset{Y}{\rightleftarrows} B]$		MP
4	Non-null actions, non-exchangeable roles	$A \overset{X}{\rightleftarrows} B$	$A \overset{Y}{\rightleftarrows} B$	AR
5	One null action, exchangeable roles	$[A \overset{X}{\rightarrow} B \text{ and } A \overset{X}{\leftarrow} B]$	$[A \overset{Y}{\rightarrow} B \text{ and } A \overset{Y}{\leftarrow} B]$	CS
6	One null action, non-exchangeable roles	$A \overset{X}{\rightarrow} B$	$A \overset{Y}{\rightarrow} B, \text{ or } A \overset{X}{\leftarrow} B, \text{ or } A \overset{Y}{\leftarrow} B$	Asocial

Exhaustive categorization of relationships in the model of two agents A and B that can each do X, Y or nothing ( $\emptyset$ ). In elementary interactions, agents can do the same thing or not (i.e. actions can be identical or different) and actions can be null ( $\emptyset$ ) or not (X or Y). Within the relationship, agents can be able to exchange roles or not.

**Fig. 4.2** - Six Categories of Action Fluxes - *Source: Favre & Sornette (2015: 7, Table 3)*

The action fluxes in **Fig 4.2** are represented by the arrows connecting actors A and B in a dyad, where X and Y represent different actions. The two actors may engage in any combination of action fluxes, such as identical actions (a form of reciprocal action such as a greeting), followed by different actions such as one questioning while the other answers. The actors may exchange roles, reversing the questioning and answering during rounds of turn-taking, while simultaneously sharing reciprocally, such as in sharing a meal. Later, they may take turns arguing a point, while later one may begin being silent and allow the other to continue to make points, settling on null actions. A series of actions may include many variations, but all of them can be related to these six elemental



relational categories. Importantly, these fluxes act as guides for different aspects of the relationship. Favre & Sornette's proof of that these six fluxes compose the definite set of six interaction styles lend proof to RMT's claims that there are only four RMs which are used to construct and order all social relations.

	<b>Fatalism</b>	<b>Hierarchy</b>
High grid	<b>CS:</b> unreliable ; extreme initiations (e.g. blood rituals) <b>AR:</b> unreliable mentor-protégé relationship; <b>EM:</b> strict reciprocity; tit-for-tat <b>MP:</b> evil, amoral <b>Asocial:</b> default state <b>Null:</b> prevents changes	<b>CS:</b> abiding by collective rules (e.g. food rituals in caste system; intolerance of same-sex relationships) <b>AR:</b> legitimate authority (based on prescribed roles) <b>EM:</b> cooperation <b>MP:</b> top-down allocation <b>Asocial:</b> violation of rules; punished <b>Null:</b> exclusion
	<b>Individualism</b>	<b>Egalitarianism</b>
Low grid	<b>CS:</b> whatever involved parties want for themselves; merging companies <b>AR:</b> expertise-based; prestige ranking <b>EM:</b> equal opportunity; one-person-one-vote; alliance <b>MP:</b> contract, bargain (individual optimization) <b>Asocial:</b> expected; triggers self-defense <b>Null:</b> voluntary withdrawal	<b>CS:</b> consensus decision-making; abiding by collective rules emphasizing absence of discrimination <b>AR:</b> charisma-based; rotating chair(wo)manship <b>EM:</b> equal opportunity <i>and</i> outcome; hinders discrimination <b>MP:</b> such that everyone benefits (e.g. barter, microcredit) <b>Asocial:</b> pathological; helped toward reintegration <b>Null:</b> exclusion
	Low group	High group

**Fig. 4.3** - RMT Mod Implementations per PRT Bias - *Source:* Favre & Sornette (2016: 14, Table 1)

The four RMs appear, at first glance, to match Plural Rationality Theory's cultural biases, and several attempts to justify a mapping have been made (cf Favre & Sornette, 2016). Some pairings between PRT's biases and RMs have a high degree of resemblance: Hierarchy with Authority Ranking (AR), Egalitarianism and Equality Matching (EM), Fatalism with Communal Sharing (CS) and Individualism with Market Pricing (MP). However, assigning one particular social relational pattern per PRT's biases has been shown to be non-plausible (Favre & Sornette, 2016). Favre & Sornette

make a case that each of the PRT biases implement all of the RMs, with examples for each, including the Asocial and Null interactions.

Like Plural Rationality Theory (PRT), Relational Models Theory presents a typology from which the complexities at a level of analysis (i.e. the Cultural Realm), can be divided and categorized to reveal a more fundamental and simple structure emanating from hidden causes. Verweij (2007) proposes calling an integration of these theories a “Theory of Constrained Relativism,” that is, one which takes evidence from social theories from disciplines such as Anthropology, Sociology, Economics, or Political Science, yet which recognizes evidence of biological constraints from Brain Research and Evolutionary theory. Such constraints offer realities that must be taken into account and which shape the actual typologies towards models of human social behavior, emotion and brain functioning. This embeds them in an evolutionary lineage connecting them with other species and models of brain functioning free from traditional assumptions which have been shown to be no longer valid (Verweij *et al.*, 2015). By taking into account not simply the latest in Cognition, but also evidence from Affective and Social Neuroscience, dimensions of brain functioning and structure long ignored by the Cognitive revolution, a Theory of Constrained Relativism can offer empirical models driving neuroscience research and further shape social theories (Verweij *et al.*, 2015).

The progress made in the Brain Sciences and Evolutionary theory over the past several decades has shown that previous notions of human behavior weren’t supported by evidence revealed by modern Neuroscience, nor that human evolution was limited to strictly Neo-Darwinian models. Older models of human behavior had been used as the basis for many dominant Social Theories, yet the many recent advances in understanding the brain and how it evolved has led to important critiques of these theories. This is especially relevant since they have been used as a basis of Policy that has mischaracterized human behavior and decision making, mischaracterizing how humans actually behave and think.

For instance, a social theory dominant in Political Science and Economics, and to a lesser extent in Sociology and Anthropology, Rational Choice Theory, posits that generalizations of human political and economic decision making can be made based on a model of human rationality using only cognition to exercise cost-benefit analysis of options available. Rational Choice Theory’s predictions of human behavior have been shown to be inaccurate by studies showing that decisions are in



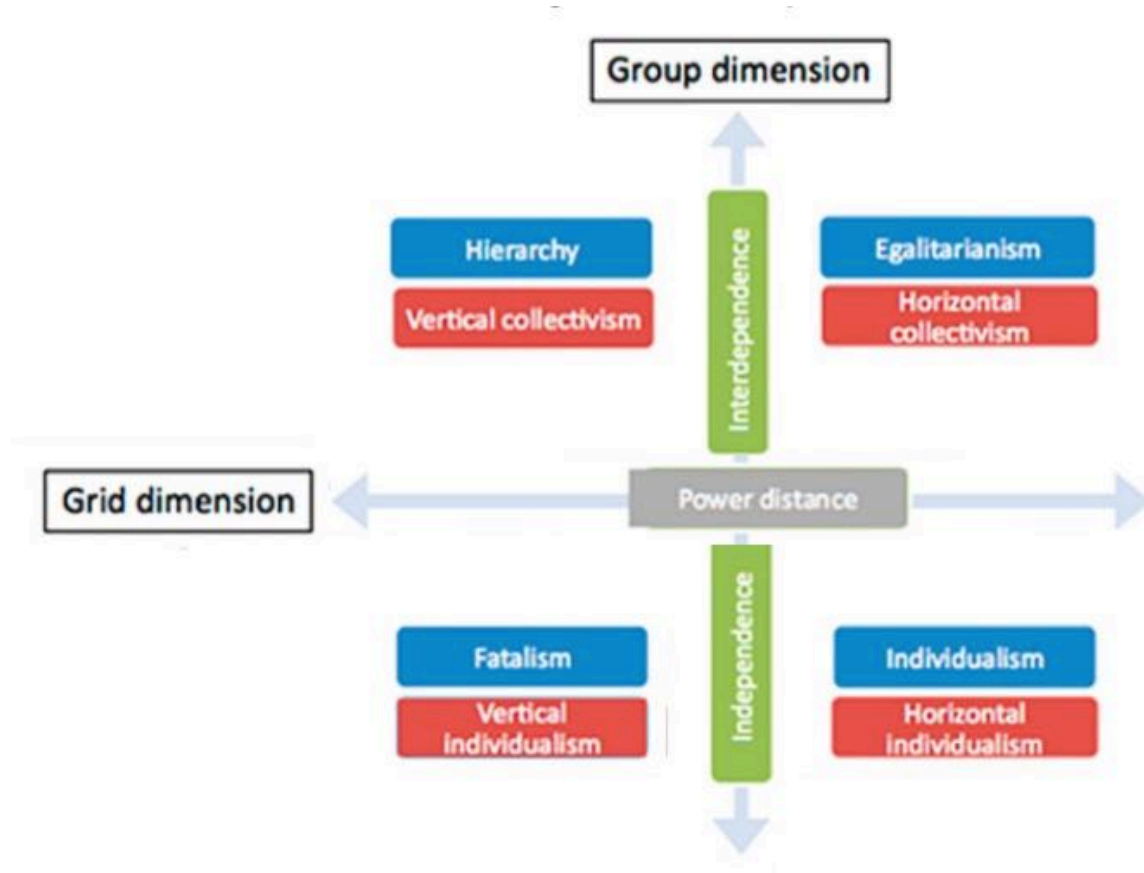
actuality affected by affect and upon social structure in unforeseen ways, squaring with the latest evidence from Affective and Social Neuroscience (Verweij *et al.*, 2015). However, the revolution of emotion studies has come to inform such human models that rationality is deeply affected by and integrated with affect and emotion. Further, the new field of Behavioral Economics, which tries to reconcile the effect of affect with rationality, has grown in stature as it posits two systems are used to make decisions, labeled System 1 and System 2 to represent a quick reacting emotional system and a slower reflective cognitive system, respectively. Yet, it too relies on a model of the human brain in which Emotion and Cognition are processed by separate neuronal systems, when in fact, Neuroscience has shown they are deeply intertwined (Pessoa, 2015)(Verweij *et al.*, 2015).

On the opposite side of the spectrum, another influential Social Theory, Post-Structuralism, posits that no generalizations can be made “on how people can organize, perceive, justify, and emotionally experience their social relations” (Verweij *et al.*, 2015: 5). It maintains that humans only come to knowledge of things through Language, which is socially constructed and subject to arbitrariness that cannot be reduced to universals. What’s more, it leads to a situation where Post-Structuralism declares there can be no truths that exist outside of each and everyone’s personal truth, pushing the valid concept of Pluralism outside the boundary of its proper scope. It however, falls prey to its own theory, as it declares itself a universal theory and ignores the deep pattern of universals across cultures, languages, neurology, etc.

Plural Rational Theory’s Grid-Group presents a middle ground theory between these two extremes, which squares with the latest evidence from affective and social neuroscience, in that emotion and feeling and the effects of others constrain how humans behave and decide (Verweij, 2007). PRT’s cultural biases encompass perception, emotion, and cognition as a “rational” system which have some influence on social interaction and decision making. PRT allows that regularities in human social life can be explained by the interplay between social interaction and cultural influences, leading to notable generalized patterns that can be identified across cultures in PRT’s four pattern typology. It recognizes the vast complexity and diversity of human patterning emerges from the combinatorial mixing of a small number of these elemental patterns which are constrained by Neurological and Biological systems (Verweij *et al.*, 2015: 6), of which twin processes of evaluating stratification (Grid) and collectivity (Group) would have distinct signatures of hormonal, emotional, neural, and autonomic patterning (Verweij *et al.*, 2015).

PRT's Group dimension of Individualism and Collectivism is used in another similar theory offered by Singelis and colleagues (1995), which produces a similar quadrant typology crossing Individualism-Collectivism with a concept of Vertical-Horizontal, very similar to the Grid construct where the vertical emphasizes Hierarchy, while Horizontal emphasizes equality. A model of Horizontal and Vertical Individualism and Collectivism (HVIC; Singelis *et al.*, 1995)(Triandis & Gelfand, 1998), posits the discernment between ways of relating the self to society originates in how one perceives one's self as either part of a collective or a separate individual that also either views other individuals in terms of difference or similarity, producing four distinct combinations of HVIC. Cross-cultural empirical evidence demonstrates that societies are found in both western and non-western countries which have dominant social constructs of horizontal individualism (HI), vertical individualism (VI), horizontal collectivism (HC), or vertical collectivism (VC) (Triandis & Gelfand, 1998). These constructs are "distinct and incommensurable", in that "no transcendent value encompasses all four types of social motive" and align with other empirical measures of Individualism and Collectivism across attitudes, values, and goal orientation (Triandis & Gelfand, 1998).

The HVIC construct seems to align tightly with PRT worldview biases, although they represent constructs at different levels of analysis, and from different directions. Where as Grid/Group focus upon macro social structural external constraints upon individuals, HVIC describes how micro psychological phenomena affect social striving, which vary from individual attitudes to the expectations and sanctions of collective social norms. The two typologies of PRT and HVIC align closely in logic, as Horizontal Individualism (HI) aligns with PRT's low Grid/low Group Individualism, while Horizontal Collectivism (HC) aligns with PRT's low Grid/high Group Egalitarianism. Similarly, Vertical Individualism (VI) aligns with PRT's high Grid/low Group Fatalism, while Vertical Collectivism (VC) with high Grid/high Group Hierarchy.



**Fig. 4.4** - Cultural Level Theory Overlaps (rotated cc 90°) -

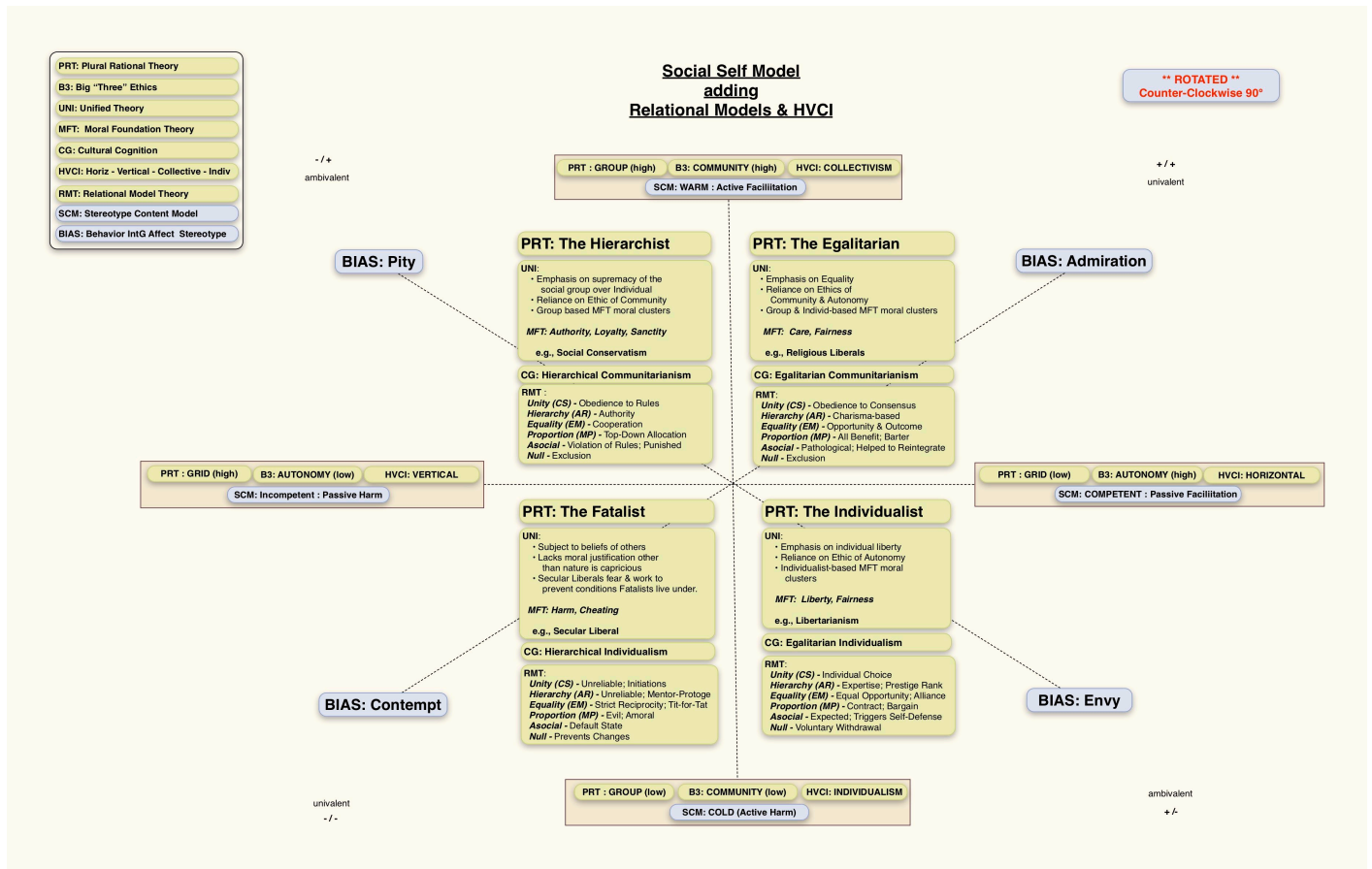
Source: modified from Verweij *et al.* (2014: 89, Fig. 1)

Verweij *et al.* (2014) support this congruency between HVIC and Plural Rationality Theory, positing that PRT could be better confirmed through cultural psychological methodologies. Ordinary measures of PRT using questionnaire inventories of cultural bias preferences loses the contextual salience which evoke cultural biases, while comparative cultural psychological methods of observation and experiment could help to verify PRT (Verweij *et al.*, 2014). Moreover, Verweij and colleagues offer an additional cross-culturally validated construct that could similarly help to better measure PRT in **Fig. 4.4**, in the Self-Construal Orientation (Markus & Kitayama, 1991) offering two orthogonal dynamics of Independence and Interdependence, where self-construal is defined as a process of seeing the self as either independent from others or defined in and through relationships with others that may be influenced by cultural contexts. Both Self-Construal and Individualist-Collectivist orientations can be considered as dynamic rather than static, as they depend upon varying social contexts (Verweij *et al.*, 2014).

And while social norms for behavior are central in HVIC, the Individualist or Collectivist dimensions vary culturally to the degree to which these norms are imposed and enforced (Gelfand *et al.*, 2006). Tightness-Looseness (TL) theory (Gelfand *et al.*, 2006) describes a dynamic which enforces the social order through the strength of social norms a culture imposes upon its members, as well as the degree to which those social norms are enforced. Cultural tightness refers to stronger social norms more strictly enforced via sanctions (rewards and punishments), while cultural looseness refers to fewer social norms, less enforcement and a certain tolerance for deviation from the norm (Gelfand *et al.*, 2006). Tightness-Looseness are a separate constructs from HVIC and covaries with Individualism and Collectivism such that a Collectivist oriented culture can be tight, such as Japan and Singapore, or loose such as Brazil (Gelfand *et al.*, 2006). Similarly, national cultures can display a looseness or tightness in Individualist cultures, where many of the most Individualistic such as the USA or New Zealand skew loose, although others like Germany skew tight (Gelfand *et al.*, 2006). And while whole cultures such as Nation-states may skew Tight or Loose generally, that bias can filter down to organizations, families, groups and individuals, although it is context-dependent (Gelfand *et al.*, 2006). Constituent sub-cultures within states or national organizations, may have a completely different level of tightness-looseness than the national character, as well as differently valuing of Individualism or Collectivism.

Tightness can be correlated with groups having experienced higher degrees of threat (Gelfand *et al.*, 2006). Societies having historically experienced more instances of natural disasters, lack of natural resources, or threats from other societies are found to be tighter (Roos *et al.*, 2015). Use of Evolutionary Game Theoretic modeling has shown in conditions of increased threat, stricter norm enforcement and higher levels of punishment prove adaptive. Cross-cultural research reinforces this, as many societies having experienced high levels of national threat tend to be tighter. At the level of individual psychology, studies have shown that under experimental conditions, artificial induction of threat cause individuals to exhibit temporary preference for tighter norms until the threat subsides (Roos *et al.*, 2015).

Adding both RMT's and HVIC's taxonomies to the Social Self Model results in the following:



**Fig. 4.5 - Social Self Model adding Relational Models**

Group regulation via social norm enforcement is central to human cultural evolution. Culture influences the organization and context of behavioral patterns, and those which are successful and adaptive are copied and spread across the population. This provides a rich system which allows for wide variation in the social structural and behavior logics of groups, with discernible patterns emerging from the effects of constraints imposed by universal dimensions. This variation allows for Cooperation within groups with Competition between groups, both key dynamics of cultural evolution (Sober & Wilson, 1998). And these two dynamics emerge from a deeper underlying social relational dynamic, two analytic dimensions which scale from the micro to the macro, namely Power and Status.

## CHAPTER FIVE

### Interpersonal Traits & Personality

*“Emotional expressions help individuals know others’ emotions, beliefs, and intentions, thus rapidly co-ordinating social interactions...emotional communication evokes complementary and reciprocal emotions in others that help individuals respond to significant social events...and emotions serve as incentives or deterrents for other individuals’ social behaviour.”*

*Keltner & Haidt (1999: 511)*

Interpersonal traits expressed through social behavior are abstract labels for behavior pattern themes that occur over time and situational contexts. The social relations Mods represent logics which cue when and how to behave in situations, which are mixed and matched during interaction. But their logics may vary along innumerable idiosyncrasies in which behavior varies, recurring “themes” of behavior which both they and observational others attribute as adjectives describing social others. Many of these terms overlap common emotion terms, as the way in which individuals express emotion are particularly of interest in social behavior. The lexical hypothesis, that every natural language would encode the features of personality universal in nature, guided psychologists in theorizing that by analyzing the terms used in language to describe individual traits would reveal and correspond to psychological and potentially neurological structure (Goldberg, 1981).

In an effort to understand the structure of personality traits, researchers used psychometric measures like lists of adjectives and asked subjects to rate themselves, close others or both, on the degree to these terms described the subject. Results were analyzed mathematically to find a core set of factors from which theoretically all personality traits were composed. The factors represent common psychological dimensions which account for the diversity of trait labels. Many taxonomies of these factors have been offered by studies using a variety of methodologies of measuring, scaling or analyzing personality traits, with many producing a similar set of five factors. A consensus has come to corroborate five broad psychological domains referred either to as the Five-Factor Model (FFM; Digman, 1990) or Big Five (Goldberg, 1990), the former found through lexical analysis and the latter

through questionnaires. The factors were originally numbered (I, II, III, IV, & V), but a consensus has settled upon standard labels of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness/Intelligence, respectively.

**Extraversion (I):** alternatively called Surgency, relates to the desire for social stimulation and relationships, and positive emotions

**Agreeableness (II):** relates to the degree of compassion and politeness towards others rather than antipathy or indifference

**Conscientiousness (III):** relates to the drive for achievement, self-effort, follow through, industriousness, planning, and organizing

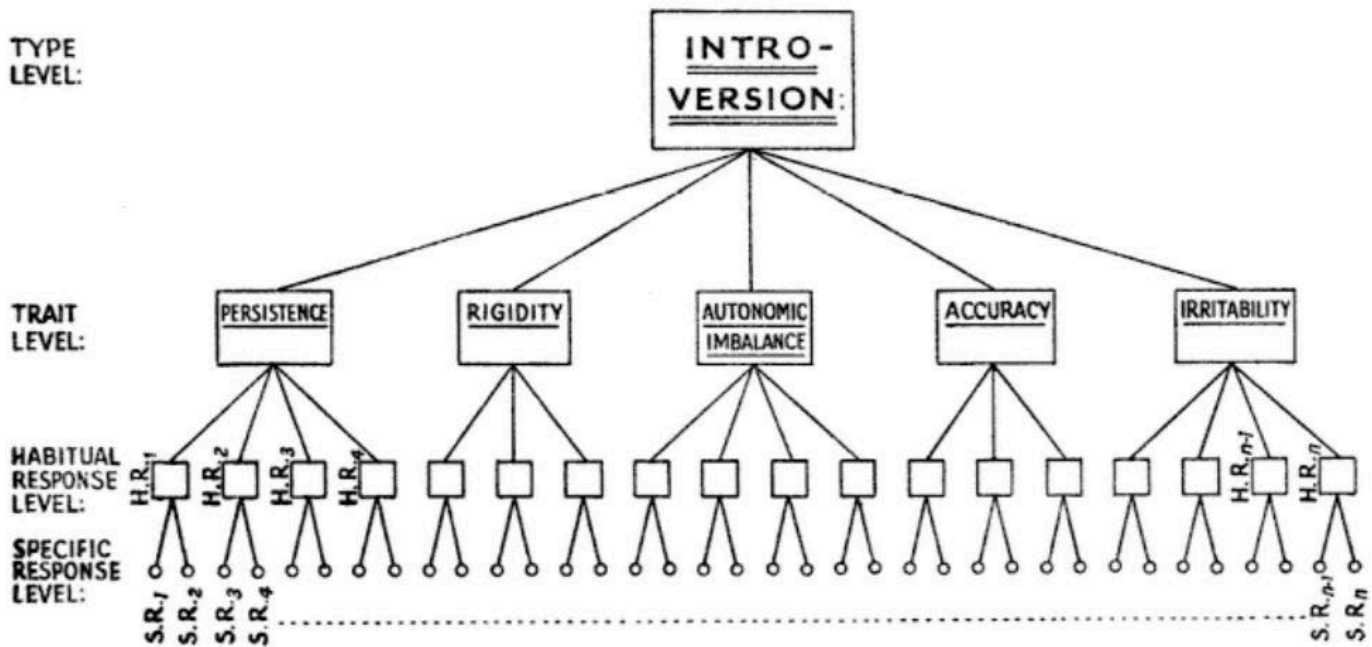
**Neuroticism (IV):** alternatively called by its antonym Stability, relates to the likelihood of experiencing negative emotions like anger, fear, depression

**Openness/Intelligence (V):** relates to the desire for change or new experiences, learning, imagination, or adventure

The five personality “domains” are used both internally in self-identification as well as used observationally to assess others socially (DeYoung et al., 2007). These five personality domains provide a universal personality trait structure (McCrae & Costa, 1997), although very generally and “put more crudely, they correspond to Power, Love, Work, Affect and Intellect (Peabody & Goldberg, 1989)” (Goldberg, 1990). The Five-Factor Model of personality has been shown to underly popular personality type inventories, as an analysis of respondents taking both the Myers-Bnggs Type Indicator (MBTI, Myers & McCulley, 1985) and the NEO Personality Inventory (NEO-PI, Costa & McCrae, 1989) found that for both self-reports and peer-reports, while the MBTI provides some correlation between some of its four personality scales and some Big Five domains, the MBTI neither provided truly dichotomous types nor measured qualitatively different types of personality, which were better described by the FFM (McCrae & Costa, 1989a).

Personality “types” are used in two different senses, as personality type theories like the MBTI, and personality trait theories, like the Big Five, each may refer to types but mean different things entirely. Personality type theories envision the domains of personality as dichotomous, with types defining common characteristics of each of the combinatorial pairings between a core set of personality domains reflecting what each unique personality settings are like. However, ignoring personality

type theories, personality trait theories suggest a continuous distribution in which most individuals fall somewhere in the middle for any particular trait and display an ambivalence in display of that trait at times and not at other times (Eysenck, 1998).



**Fig. 5.1** - Diagrammatic Representation of Hierarchical Organization of Personality -

Source: Eysenck (1998: 29, Fig. 2)

Eysenck (1998) explains that for personality trait theories, types and traits are related as different level constructs from observed instances of specific and habitual responses. In this sense, types represent superordinate factor structures over trait level factors, which themselves summarize habitual cognito-behavioral responses, which themselves are similarities of specific responses to the same stimuli. Eysenck (1998) explains how each level are directly related to Factor analysis components:

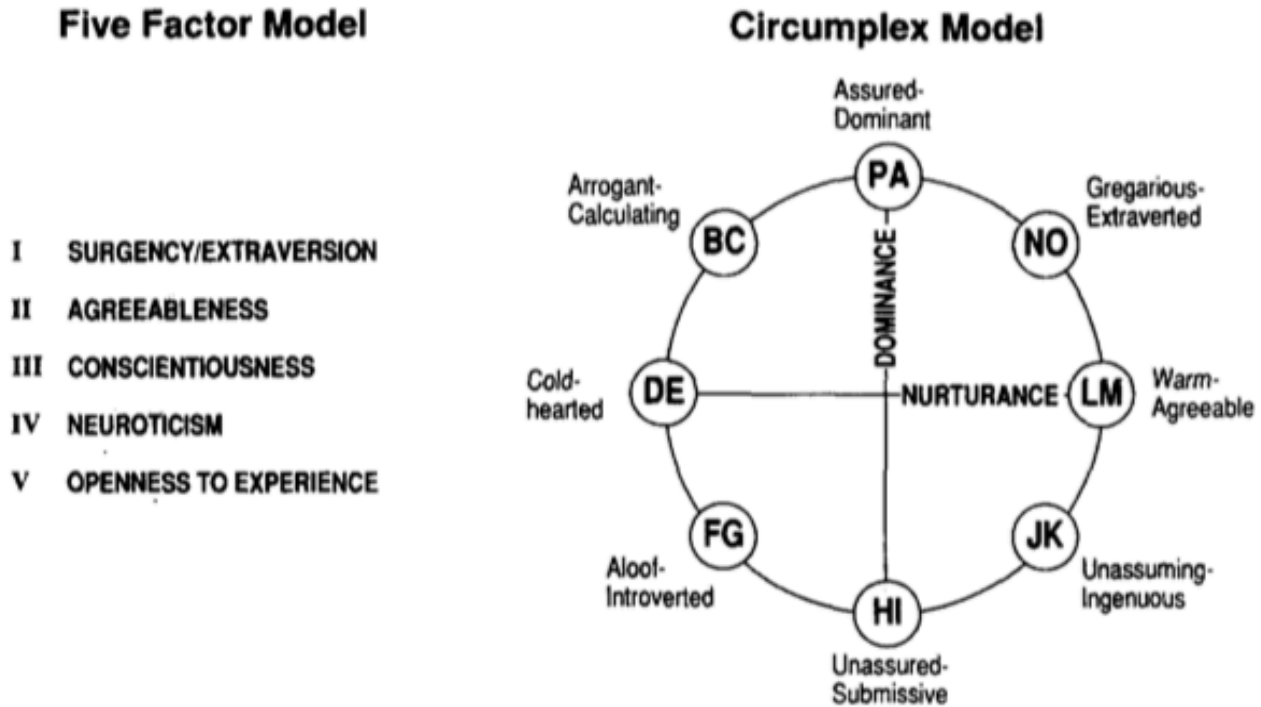
*“our four levels of personality organization correspond closely to the four types of factor distinguished in our discussion of factorial methods: error factors, specific factors, group factors, and general factors. An “habitual response” is merely a “specific response” divested of its error component, and made into a specific factor; a “trait” is a system of “specific responses” divested of its error and specific variance; a “type” is a system of “specific responses” which has lost its error, specific, and group factor variance.” Eysenck (1998: 30)*



It seems the trait level, in which a system of “specific responses divested of its error and specific variance,” represents the common level at which humans summarily label individual consistencies, while types represent consistencies across individuals as categories with which to compare whole individuals. A hierarchical view of personality places Big Five level domains as types which summarize a set of recognizable trait level constructs, which themselves summarize specific and habitual instances.

Personality traits used to measure levels of the Big Five can also be viewed as linearly related along a circle. A Circumplex Model of personality emerged from a separate line of study within personality psychology focusing upon interpersonal dynamics, using a geometric circumplex analytic originally introduced by Guttman (1957) as a statistical method to elucidate the correlation pattern of data in a circular matrix (Gurtman, 2009). A typical circumplex analytic model contains a cartesian map from two co-varying dimensions which produce a continuous circular plot of data that is formalized in relationships between data around the circle, forming a continua of trait variables (Gurtman, 2009). Circumplex models have been commonly used for analysis of emotion (Plutchik, 1980) and as well as interpersonal behavior in the Interpersonal Circumplex (Leary, 1957). The continuous plot of data is sometimes divided into quadrants or octants which in some models, such as the Interpersonal Circle, are cast as dichotomous behavioral types occupying opposite sides of the circle.

While each of the Big Five personality domains have some affect on interpersonal relations, Extraversion and Agreeableness are intrinsically interpersonal domains which “determine directly the amount of social stimulation preferred and the prevailing quality of social interaction” (McCrae & Costa, 1989b: 586). The other three are tangential to the impersonal domain, although they may also influence how much people may desire to interact with people sharing related traits (McCrae & Costa, 1989b). Thus, the general Interpersonal Circumplex has only a partial correspondence to the Big Five.



**Fig. 5.2** - The Five Factor Model of Personality & Interpersonal Circumplex Model -

*Source:* Trapnell & Wiggins (1990: 782, Fig. 1)

**Fig. 5.2** shows two trait theories originating from different traditions in psychology, the Five Factor or Big Five models of personality and the Interpersonal Circumplex (IPC). The IPC models a core set of strictly interpersonal behavioral dimensions arranged around the circumplex in 45° octants that result from variance between two orthogonal dimensions in various IPC models labeled as Status, Agency or Dominance and Love, Communion, or Nurturance, respectively (Gurtman, 2009) (Wiggins, 1991)(DeYoung *et al.*, 2012). Octants have the property that those near each other are more positively correlated, while those across and opposite are negatively correlated, with those at 90° non-correlated (Gurtman, 1997). The general IPC is typically oriented with the Assured-Dominant to Unassured-Submissive axis running vertically and Warm-Agreeable to Cold-Hostile axis running horizontally. Various attempts have been made to integrate the axes of the IPC with the interpersonal Big Five traits of Extraversion and Agreeableness. While both models have used circumplex methods of analysis, the two models in **Fig. 5.2** have not traditionally been unified (McCrae & Costa, 1989b).

Abele & Wojciszke (2007) support the correlation of universal dimensions of models like the Stereotype Content Model (SCM) and the Interpersonal Circumplex (IPC) with two broad categories

termed Agency and Communion representing primary modes of acting as an individual and participating within a collective respectively (Bakan, 1966). Rather than being opposite ends of a single bipolar dimension, Agency and Communion have been found to be orthogonal (Wiggins, 1991), able to covary and have been integrated with the IPC. Agency as a social concept, represents the interests of the self, such as goal pursuit benefitting a self-perspective while Communion as a social concept, represents the interests of the group. The IPC shows analytically that interpersonal traits are some “amalgamation of Agency and Communion” (Wiggins, 1991), or similar universal dimension pairs. These two concepts provide broad dimensions recognized by many models in Social Psychology, Social Cognition, Personality Psychology, etc. and correspond to dimensions from those fields which correlate cross-culturally (Abele & Wojciszke, 2007). A list of person trait types for both dimensions align with the Social Self Model’s two Universal Dimensions, as in **Fig. 5.3** below:

#### AGENCY - interests of the self

- Intellectually good–bad
- Independent self
- Instrumentality
- Competence
- Competence of stereotyped groups
- Dominance / Ambition
- egoistic bias - the “superhero” bias
- Power
- Autonomy
- independent self-construal
- self-profitable / self-harmful
- masculinity stereotype

#### COMMUNION - interests of others

- Socially good–bad
- Interdependent self
- Expressiveness
- Morality
- Warmth of stereotyped groups
- Warmth / Nurturance
- moralistic bias - the “saint” bias
- Intimacy
- Trust
- interdependent self-construal
- other-profitable / other-harmful
- femininity stereotype

**Fig. 5.3** - Universal Dimensions of Social Person Traits Agency & Communion -

*Source:* compiled from Abele & Wojciszke (2007; 2013)

As we shall see later, Self and Other perspectives are essential in social relations as well as at lower levels of this analysis in Neurophysiology, Behavior and Psychology. Many of the details and corresponding evidence will become apparent when examining three sets of examples matching

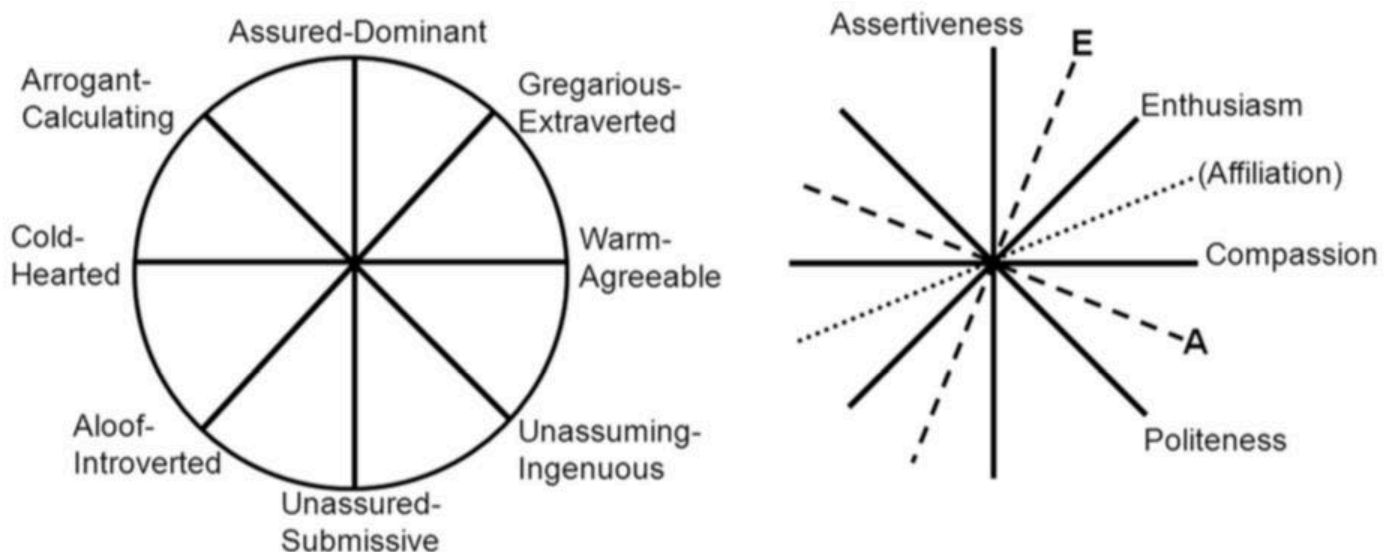
Autonomic Nervous System activation, Emotion generation and Self/Other orientations of the Social Engagement System. The SCM measuring social perception of others is based on real perceptual biases related to human neurophysiology, while at the same time having certain psychological & cultural influences.

In the circular conception of personality traits, lexical analysis of trait adjectives have shown that almost all are some combination of two Big Five superordinate traits (DeYoung *et al.*, 2007). Most personality trait labels are adjectives, which are found to “load” on two of these five domains statistically, meaning they are not unit measures in one of these domains but complex numbers as in coordinates in a cartesian map with two domains as axes. Such a map would contain a field of trait labels whose positions indicate some amount of one factor and some amount of another, with the load on each equal to the amount expressed, essentially a percentage. Statistical methods take the basic plot of traits and normalize them to appear along a circle around the matrix, thus the circular matrix or circumplex. Hofstee, de Raad, & Goldberg (1992) used circumplex analytic methods to produce a circumplex for each unique pairing of Big Five domains, yielding 10 in all, which was packaged as the Abridged Big Five Dimensional Circumplex (AB5C) taxonomy of personality traits. The AB5C adjective scales contain a series of subtraits for each superordinate Big Five domain called facets which provide facet-level coverage from an algorithmic design (circumplex statistics) rather than a theoretical design that some consider as having greater descriptive coverage (DeYoung *et al.*, 2007).

The hierarchical way of viewing personality traits originated from the lexical study of language. While early studies used giant lists of personality-descriptor items (15,000+) to produce sets of personality terms that were grouped into clusters and used for analysis, Goldberg (1990) used a 1400+ trait list grouped into 75 clusters, as well as several other adjective lists, to show across three studies that a variety of 10 factoring methods led to a similar five-factor model with a very high level of congruence. The hierarchical model also uses facet-level subtraits (or Trait-level constructs in **Fig. 5.1**), although derived theoretically (McCrae & Costa, 1997). The Revised NEO Personality Inventory (NEO-PI-R) (Costa & McCrae, 1992) is one such methodology, offering a commercial questionnaire that measures 30 general personality traits or facets which define the five personality domains of the FFM, showing strong convergence between self- and observer-reports (Costa & McCrae, 2008). Alternate, open source measures approximating the NEO exist, such as the International Personality

Item Pool representation of the revised NEO (IPP-NEO), while shorter open source tests exist, such as the Big Five Inventory (BFI) or the Big Five Aspect Scales (BFAS) measuring the Big Five and the 10 aspects of personality.

The exact correspondence of the FFM's interpersonal factors, Extraversion (I) and Agreeableness (II), with the Interpersonal circumplex's cardinal axes, as well as with circular personality analytics had not previously been firmly established. A separate taxonomy called the Big Five Aspects, emerged from an effort to analyze whether a hierarchical level of subtraits exist *between* the Big Five and their six facets (DeYoung, Quilty, & Peterson, 2007). Using the AB5C-IPIP (Goldberg, 1999) and NEO-PI-R (Costa & McCrae, 1992) personality questionnaires to study facet structures for each Big Five domain found they coalesce around two subtraits or aspects (DeYoung, Quilty, & Peterson, 2007). The Big Five Aspect subtraits were used to analyze the exact alignment of the Big Five's Agreeableness and Extraversion interpersonal domains and their two aspects with the circular model IPC (DeYoung, Weisberg, Quilty, & Peterson, 2012). In that study, three sets of subjects were given several well-known questionnaires, with all given Big Five Aspect Scales (BFAS) measuring the Big Five and the 10 aspects, in addition to the Big Five Inventory (BFI) measure. The IPC's octants and dimensions were correlated using three different methods, one for each set of subject pools, with Group 1 answering the Social Behavior Inventory (SBI) to assess social behaviors, Group 2 the SBI and Interpersonal Adjective Scales–Revised (IAS-R) measuring IP circumplex traits, and Group 3 the IPIP- IPC scales (Markey & Markey, 2009).

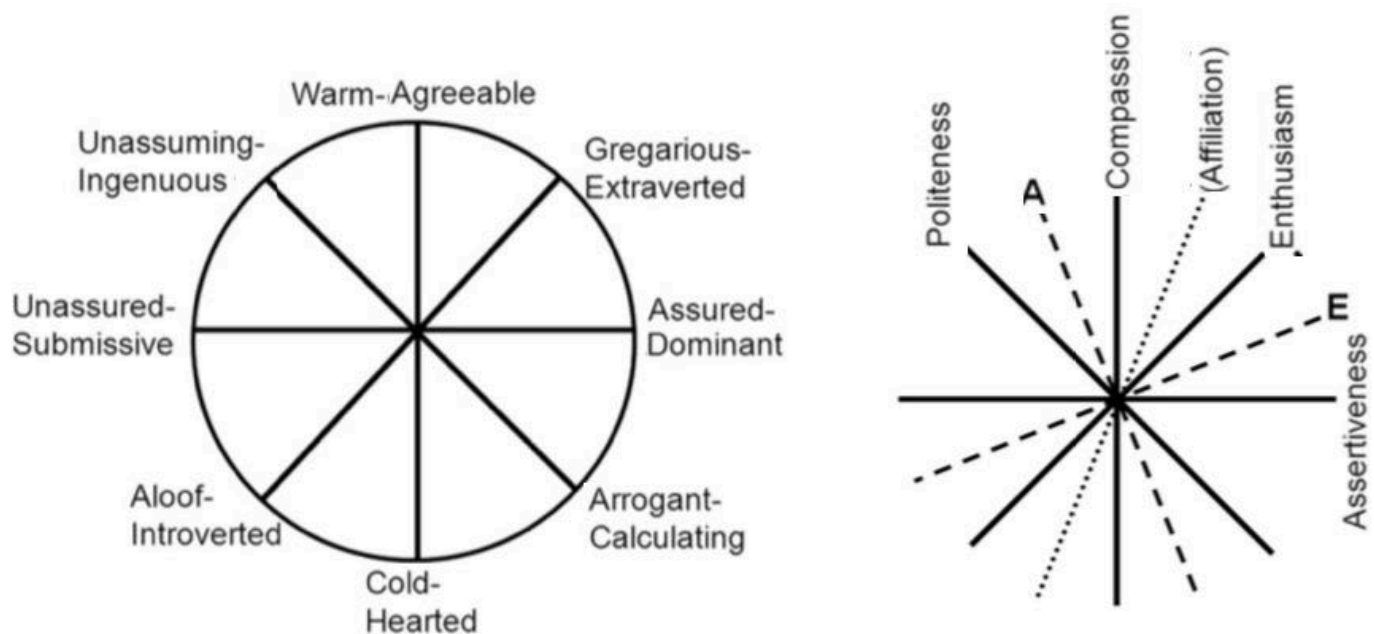


**Fig. 5.4** - Interpersonal Circumplex w/ Big Five's Interpersonal Domains & Aspects -

Source: DeYoung, Weisberg, Quilty, & Peterson (2012: 466, Fig. 1)

Analyses from that study provided a theoretical placement upon the generalized Interpersonal Circumplex (left image) in **Fig. 5.4** of the orthogonal interpersonal dimensions (E)xtraversion and (A)greeableness, labeled in the right image as the dotted axes. Their angles diverged from the IPC's orthogonal axes (Assured-Dominant) & (Warm-Agreeable) by  $22.5^\circ$  using circumplex analytical methods (DeYoung *et al.*, 2012). (E)xtraversion and (A)greeableness are bounded on both sides by their two aspects, Assertiveness & Enthusiasm and Compassion & Politeness, respectively, with the circumplex midpoint falling equidistant from outside of both E's and A's aspect range. That midpoint was found to be Trait Affiliation, situated between Extraversion's Enthusiasm and Agreeableness' Compassion (DeYoung, Weisberg, Quilty, & Peterson, 2012).

The IPC left image in **Fig. 5.4**, or any IPC model for that matter, can be isomorphically transformed from the original while retaining equivalency by rotating counter-clockwise  $90^\circ$ , then flipping horizontally. That isomorphic transformation can also be applied to the statistical relationships between the Big Five's Extraversion & Agreeableness and their Aspects in relation to the IPC (right image) in **Fig. 5.4**, preserving the relationships between the two co-varying dimensions of the IPC and interpersonal traits and aspects. That transformation applied to both yields the following isomorphisms:



**Fig. 5.5** - Isomorphic Transformation of IPC w/ Big Five's Interpersonal Domains & Aspects -

Source: adapted from DeYoung, Weisberg, Quilty, & Peterson (2012: 466, Fig. 1)

The transformation of the IPC in **Fig. 5.5** changes the Warm-Agreeableness axis to align vertically, while the Assured-Dominant axis aligns horizontally. Similarly in the right image, the IPC Warm-Agreeable maintains its alignment with the Compassion aspect of Agreeableness while the Assured-Dominant aligns with the Assertiveness aspect of Extraversion, with the domains' other two aspects occupying the 45° diagonals of Politeness (Ag) and Enthusiasm (Ex). Trait Affiliation's position as computed by DeYoung and colleagues, particularly illustrated by the transformed isomorphism in **Fig. 5.5**, will later be shown to have an important correspondence to theories in other disciplines, particularly those which have been used to glean how personality traits and dispositions are related to cultural worldviews, particularly political worldviews.

Agreeableness' two aspects have been found to be differently related to Conservative and Liberal political worldviews, with Politeness more associated with norm compliance and traditionalism, while Compassion more with empathy and interpersonal concern (Hirsh *et al.*, 2010). While the analytic study of this relationship characterizes this difference in focus due to the emphasis Conservatives place upon order and Liberals place on equality and fairness (Hirsh *et al.*, 2010). However, these higher order relationships with personality traits can be better explained through social structural dynamics in following chapters, for which this study will attempt to elucidate.

DeYoung and colleagues' analysis seems an example of what Timmermans & Tavory (2012) qualify as Abductive Analysis:

*“Abductive analysis involves a recursive process of double-fitting data and theories. An abductive inference involves making a preliminary guess based on the interplay between existing theories and data when anomalies or unexpected findings occur. If the existing theories fully account for the empirical phenomena, the researcher has simply verified an existing theory.” Timmermans & Tavory (2012: 179)*

McCormick & Goldberg (1997) note that factor analysis aligns along two different views of the data, vertical and horizontal, of which two separate mathematical scale types developed independently by Guttman (1954) and Stevens (1975) correspond to one or the other. A vertical point of view sees items best described by those variables most strongly associated with it, where there is a single

loading upon one factor, termed a simple structure, yielding a hierarchic structure. A horizontal point of view recognizes complex structures in which two or more loadings upon a factor, making it factorially complex and dependent upon the relationship of all factors. These differences between vertical and horizontal structures have effects upon the psychometric scale types used to inventory data in the analysis of personality traits (McCormick & Goldberg, 1997).

Guttman's circular mathematics differentiates between a simplex and circumplex structures, where the former simply lists variables in a rank ordering that can be mapped to the real number system. Guttman's circumplex represents a complex continua in which position upon the circle corresponds not to the real number system but the complex number system having two components, two orthogonal dimensions of which each point variable is composed. While the variables of the circumplex array around a topologically one-dimensional line in circular form, their ordering is not rank ordered, for there is no beginning or least value and no end or highest value (McCormick & Goldberg, 1997).

Guttman also produced a radex model which combined the simplex and circumplex into a single analytic which measures bivariate space in which two scales are represented around the circle that go in opposite directions (clockwise and counterclockwise). Variable loadings differ depending upon the direction going around the crumpled, as in one direction the items load on one meaning of factors, while in the opposite direction they load in the opposite, which can be seen within the general IPC when going clockwise from Dominance in that traits load on Agreeableness and Extraversion, whereas counter-clockwise upon Hostility and Extraversion (McCormick & Goldberg, 1997: 114). This has the effect that similar list of trait scales can be interpreted differently depending upon the factor analysis (McCormick & Goldberg, 1997).

Independently, Stevens' (1946) original work in defining Nominal, Ordinal, Interval, and Ratio scale types developed from psychometric tests of auditory, olfactory or other sensory modalities, led to his defining of prothetic and metathetic continua. Prothetic continua provide a scale which represent differences by degree or magnitude, while metathetic continua provide a scale represented by differences in kind or quality (McCormick & Goldberg, 1997). These correspond to Prothetic continua representing an ordinal ordering measuring rank ordering while Metathetic continua represent an interval ordering that can be named or associated with separate categories. These two



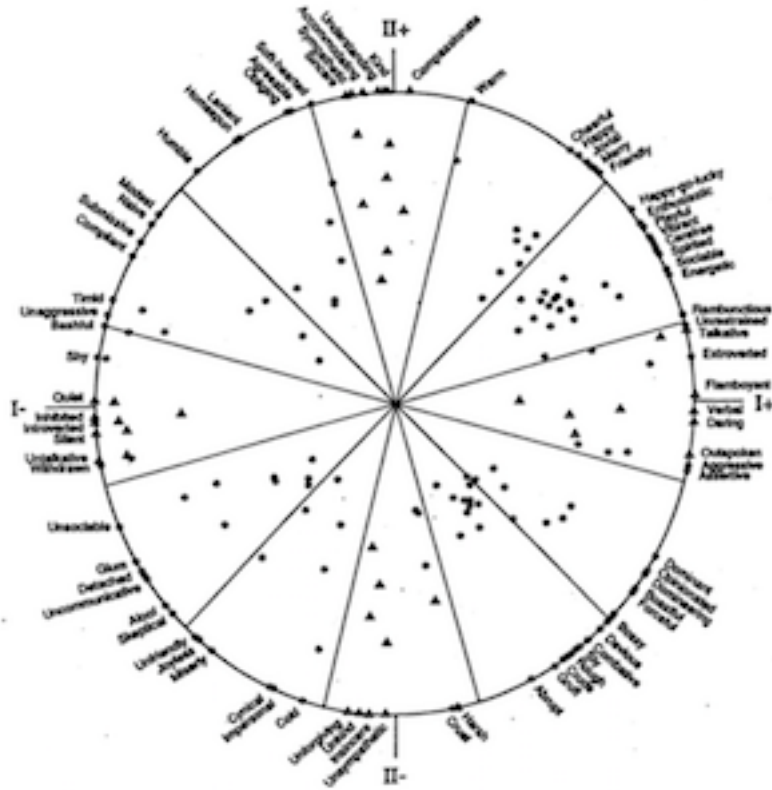
continua also correspond mathematically to Guttman's simplex and circumplex models, as well as to vertical (hierarchical) and horizontal scale types.

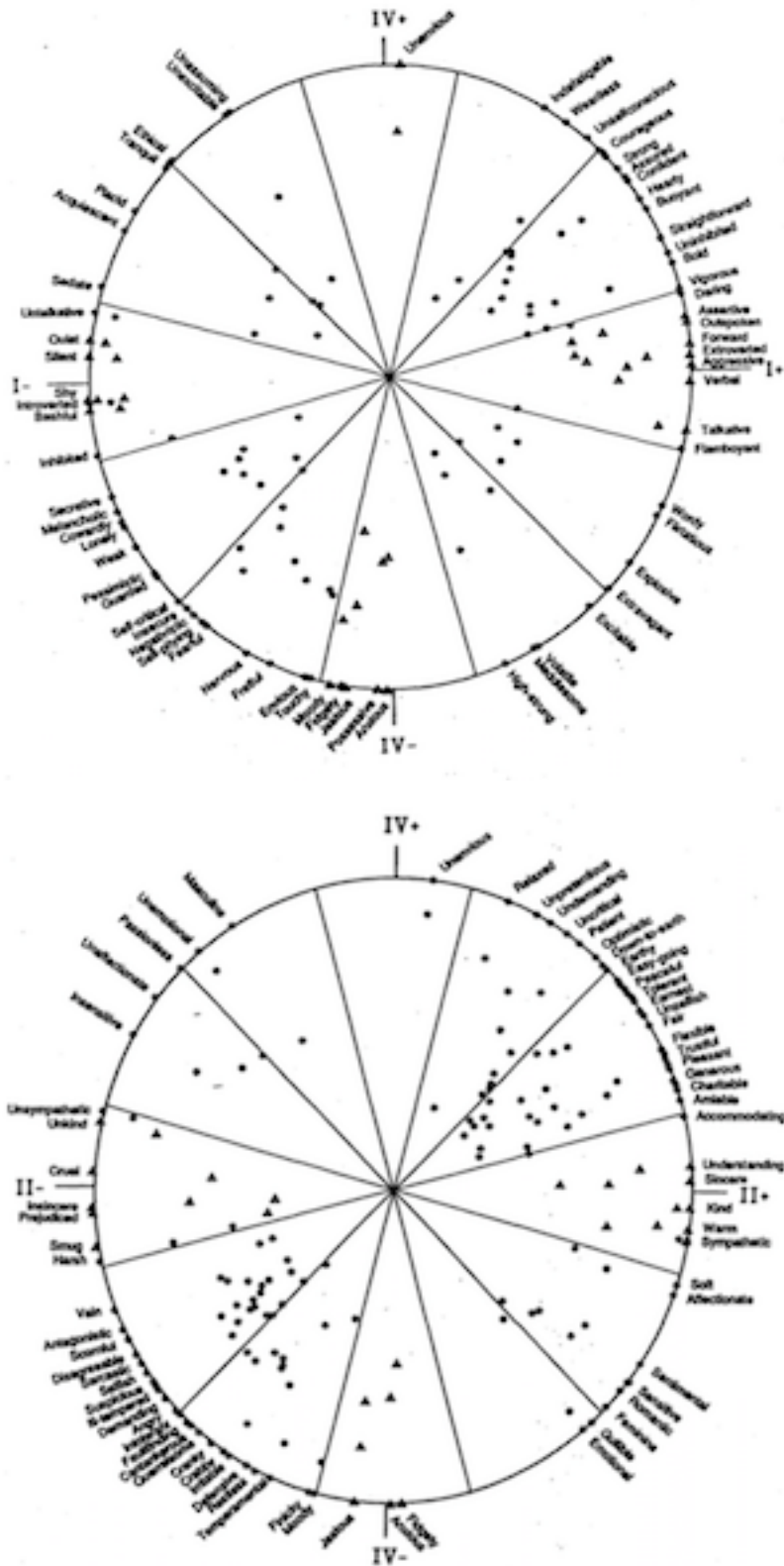
A study of the comparative validity of the NEO-PI-R, the California Psychological Inventory (CPI) and Hogan Personality Inventory (HPI) at correlating (observer) acquaintance ratings of the Big Five found that the NEO-PI-R outperformed the others (Johnson, 2000). The AB5C's facet structure was used to analyze the trait terms used by each of these three inventory measures to confirm Personality Domains, which found that secondary loadings of terms affected the nuance and connotative meaning of those Domains:

*"different collections of trait terms designed to assess the same domain conceivably could measure somewhat different constructs if the secondary aspects of the traits differ systematically. For example, if one used ratings of alert, ambitious, firm, and purposeful (all with primary loadings on the third factor and secondary loadings on the first factor, or 3 + 1 +) to measure conscientiousness (domain III), one would actually be measuring an extroverted (1 +) form of conscientiousness. The overall character of the scale would be 3+1-. On the other hand, using ratings of careful, cautious, punctual, and formal (all 3 + 1 +) would assess an introverted (1 -) form of conscientiousness. This scale would have a 3 + 1 - character. Researchers using 3 + 1 + scales would probably view domain III as Will to Achieve (Digman and Takemoto-Chock, 1981), whereas researchers using 3 + 1 - scales would be more likely to view the domain as Constraint (Tellegen and Waller, 1999)."*  
 Johnson (2000: 2-3)

Hofstee, de Raad, & Goldberg (1992) avoided the potential bias as described by Johnson in the quote above by producing circumplex structural analysis of every unique pairing of Big Five domains as the two axes across a large trait list. Their production of Big Five subset facets originated in circumplex methods applied to each of the unique pairings of the Big Five, by comparing such effects of other Big Five domains for each of the 10 paired circumplexes, which enabled them to extract six facets per Big Five domain that became the basis of the Abridged Big Five Dimensional Circumplex (AB5C) taxonomy of personality traits. Saucier, at the same time using similar methods, compared Factor loadings and interstitial benchmark traits along a circumplex in an effort to determine whether personality structure is better defined by discrete or continuous methods (Saucier, 1992). Saucier

sought to determine the exact position of Big Five personality axes in trait circumplexes by using factor poles in producing interstitial benchmarks, combining both discrete and continuous methods. Saucier found that three of the 10 pairings produced “near-perfect simple structures” having “more circularity and continuousness” (Saucier, 1992: 1027).





**Fig. 5.6** - Three Important Circumplex Trait Structures of Big Five Pairings -  
*Source:* excerpted from Hofstee, de Raad, & Goldberg (1992: 149-153, Fig. 1)

The three unique pairings of Big Five domains in **Fig. 5.6**, which actually displays the same paired circumplexes produced by Hofstee, de Raad, & Goldberg, were found by Saucier to together define a 3-dimensional affective space in which all personality traits could be located within the continuous space. These pairings were Extraversion (I) & Agreeableness (II) (upper left), Extraversion (I) & Neuroticism (IV) (upper right), and Agreeableness (II) & Neuroticism (IV) (bottom). The first pairing of Extraversion (I) & Agreeableness (II) factors were well known as the co-varying dimensions of the interpersonal realm. So too are the pairing of Extraversion (I) & Neuroticism (IV) factors known to produce co-varying dimensions of the affective realm. However, the third pairing of Agreeableness (II) & Neuroticism (IV) produce a “mixed” interpersonal and affective realm that “hadn’t previously appeared in the research literature” (Saucier, 1992: 1033).

Gurtman used several circumplex methodologies on a different trait list, the 100 item California Q-Set (CQ) list, for which the five factor model personality traits have been shown to be extractable (Gurtman, 1997). Three circumplex structures were extracted from the CQ list data, confirming Saucier’s (1992) results that three domain pairings producing uniform results along the circle. Again, the three pairings of Extraversion (I) & Agreeableness (II), Agreeableness (I) & Neuroticism (IV), and Agreeableness (I) & Neuroticism (IV), produced an Interpersonal Circumplex, and Affect Circumplex, and a “Mixed” circumplex combining both interpersonal and affect (Gurtman, 1997). Near linearity of plots of CQ datapoints’ circumplex angles for each of the three sets of FFM trait pairings (**Fig. 5.7** below) indicate uniform distribution of items around the circumplex (Gurtman, 1997). However, each have some gaps, particularly in the Affective circumplex, either indicating a “gap affective space (e.g., Meyer & Shack, 1989) or in CQ item sampling” (Gurtman, 1997: 85).

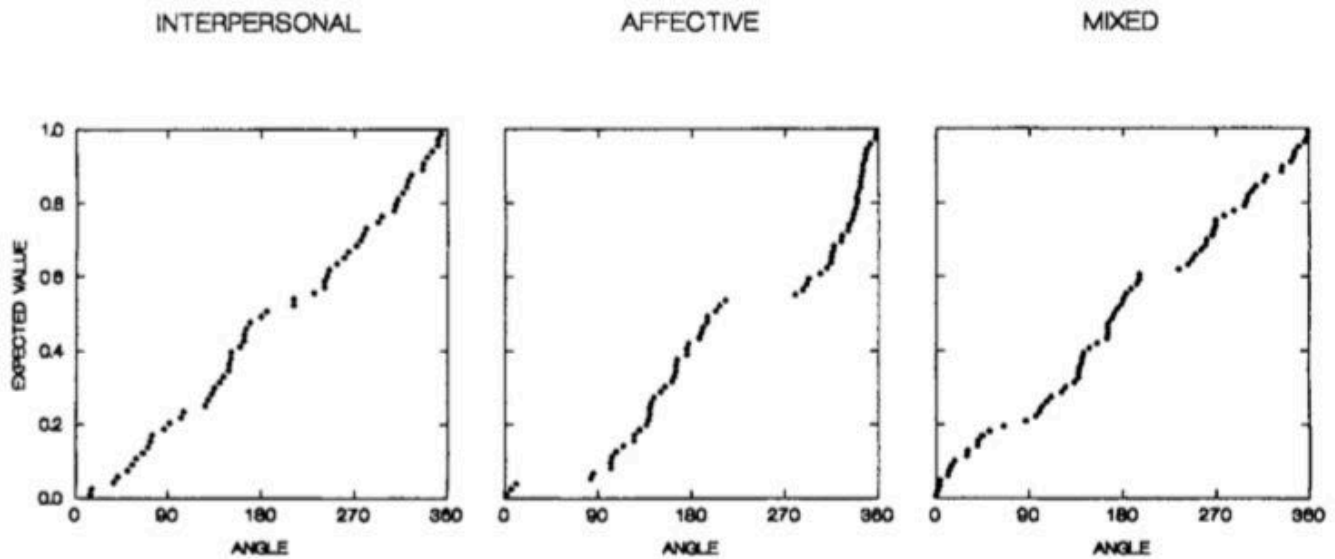


Figure 4. Probability plots of the items of the three CQ-circumplexes. Items' angular positions plotted against the expected values assuming a uniform distribution; Mixed refers to Agreeableness-Neuroticism circumplex.

**Fig. 5.7** - Probability Plots of Items of three CQ Circumplexes - *Source*: Gurtman (1997: 88, Fig. 4)

What is important about these results is not necessarily that the Circumplex analytic may be used to model relationships between several correlated personality traits, but that covarying relationships between three particular pairings of the Big Five superordinate traits are found to produce uniform data plots in which all CQ traits could be discretely positioned within the continuum, agreeing with Saucier's findings. Yet while Gurtman's analysis makes clear that interpersonal and affective dimensions of personality clearly are describable by covariation of two personality domains, the "mixed" Agreeableness-Neuroticism circumplex does not have a clear semantic label nor functional analogue despite displaying the most uniform plot, largely due to vast array of descriptive items related to Neuroticism, perhaps effects from the effort of clinical pathologizing.

In the trait analysis of the CQ, Gurtman matched these results with another analysis of CQ item data focused on another personality facet construct, **social acuity**, or the ability to social perceive the psychological state of others (Funder & Harris, 1986), and found the Agreeableness-Neuroticism circumplex described this space (Gurtman, 1997). Social acuity represents a group of social skills which require non-verbal perceptive sensitivity to affect, both within one's self and externally through socially transmitted affect (Funder & Harris, 1986). The ability to self-monitor what one is feeling during engagement relates to affective proprioception and interoceptive monitoring, which

itself is composed of separable dimensions of capability (discrimination)(Garfinkel *et al.*, 2014). The ability to socially monitor others during engagement and act accordingly requires exteroceptive sensitivity, while empathetic feeling requires self-other awareness (Decety & Jackson, 2004) having separable cognitive and emotional elements and capabilities (Decety & Lamm, 2009), describing alteroceptive ability to feel as another is feeling. Proprioception, Exteroception, and Alteroception are primary channels of affective perception related to the basic affects (Panksepp, 1998), for which Gurtman (1997) and Saucier (1992) provide evidence are involved in defining the full affective space which all trait labels can be situated systematically.

Adding to our previous model (**Fig. 4.5**), the Interpersonal domain offers a variety of analytics. While all three of the circumplex trait spaces are required to describe the full trait space, the Social Self Model describes the Interpersonal space, with the other two circumplex spaces orthogonal. Thus, the placement of the Interpersonal factors of the Big Five, Extraversion and Agreeableness, can be placed using the isomorphic transformation of the IPC's axes as in **Fig. 5.5** (right image), guided by their two aspects, derived through analysis of the two facet-level inventories produced from both theoretic (NEO-PI) and algorithmic (AB5C-IPP) design, confirming a subtrait layer between Domains and facets (DeYoung *et al.*, 2012), or between Types and Traits (Eysenck, 1998). Placement of Extraversion and Agreeableness and their aspects map one aspect with a major axis and one on the diagonal axis, placing the interpersonal domains between, while trait Affiliation occupies the space between Compassion (Ag) and Enthusiasm (Ex) (DeYoung *et al.*, 2007). The dimensions of Agency and Communion a generalized interpersonal terms align with the Universal dimensions of the Social Self Model. The integration of both interpersonal dimensions and traits into the Social Self Model yields the following:

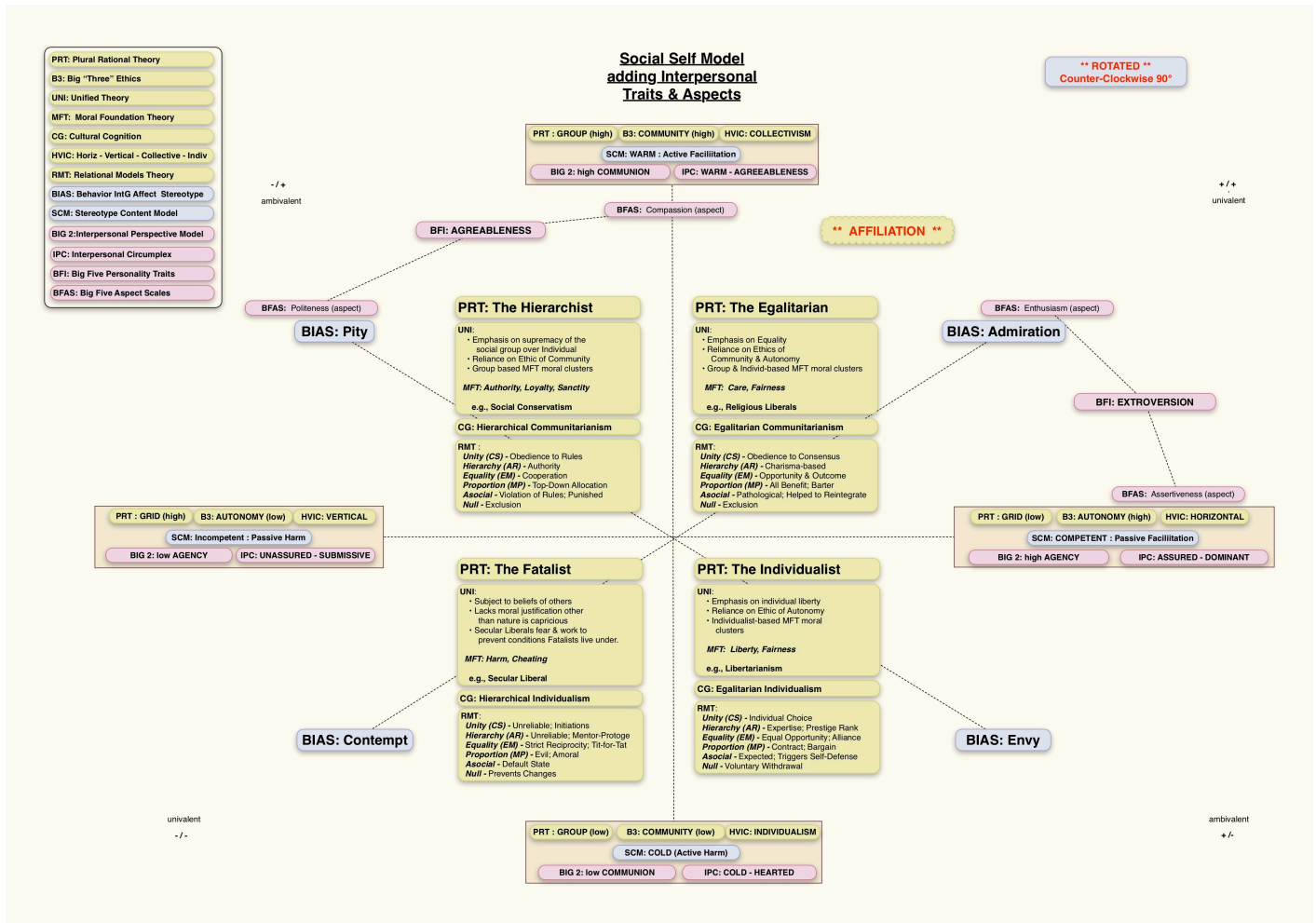


Fig. 5.8 - Social Self Model adding Interpersonal Traits &amp; Aspects

## CHAPTER SIX

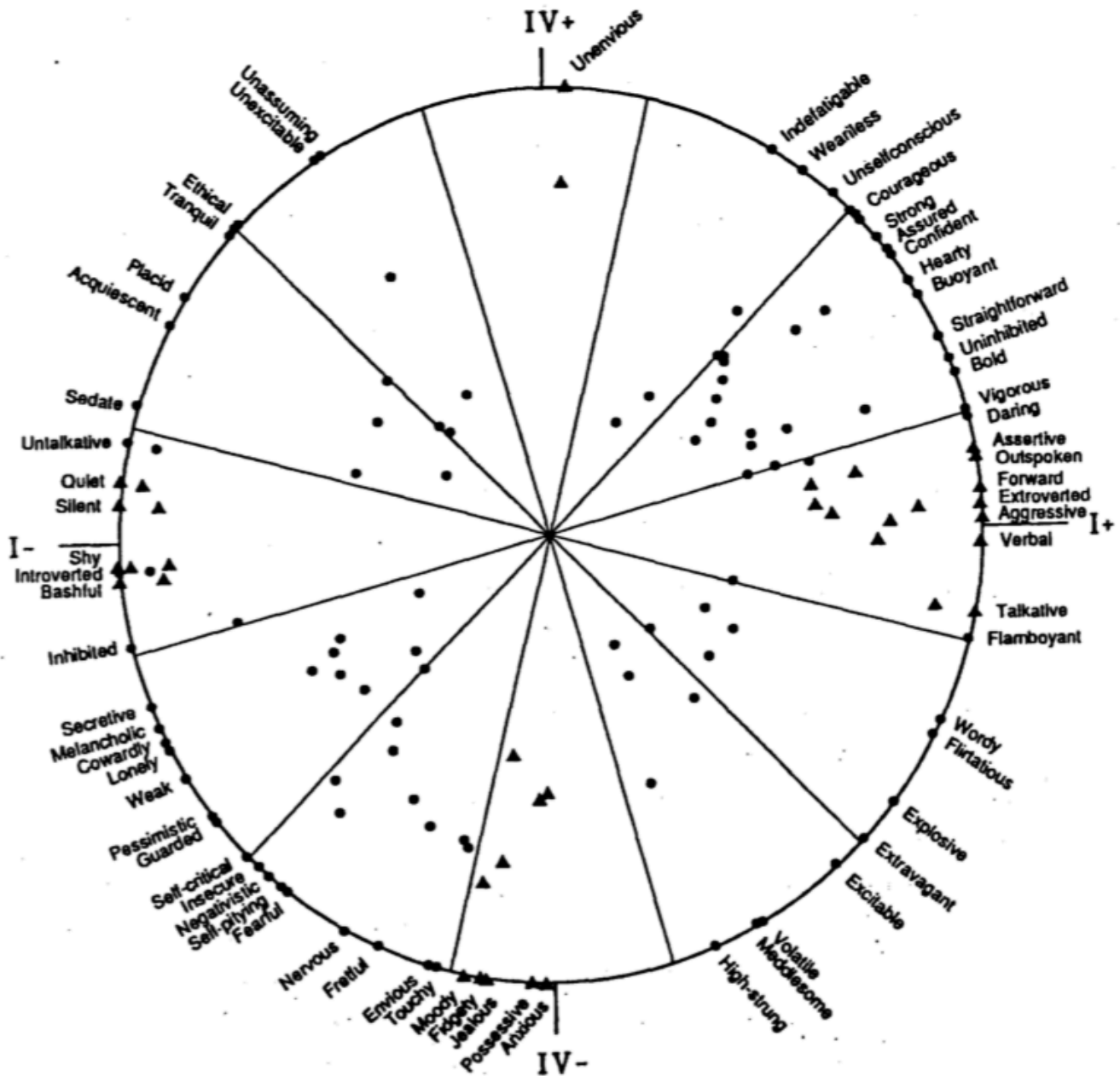
### Core Affect & Emotion

*“To the extent that situations are structured and recurrent over evolutionary time, their statistical properties can be used as the basis for a special kind of psychological adaptation: an emotion.”* Tooby & Cosmides (1990: 410)

The circumplex labels used to describe the three unique pairings of Big Five personality traits over which all traits could be mapped, the so called Interpersonal, Affect and Mixed circumplexes (Gurtman, 1997), use terms that are utilized in emotion research having somewhat different meanings. Personality traits defined as interpersonal and affect traits share the same language as emotions and are derivatives of emotions (Plutchik, 1980). The terms affect and emotion are often used interchangeably, while feelings connote something different, with each of these having some relation to interpersonal (social) relations between people. However, Affect and Emotions are different constructs, and their relation to feeling and the interpersonal realm are important to further elucidate.

The Affective circumplex (upper right) from **Fig. 5.6** displayed the continuum of personality traits which factor load upon the Extraversion (I) & Neuroticism (IV) personality domains of the Big Five. Trait terms refer indirectly to habitual characteristics of interpersonal behavior which over time are recognized as a type of likelihood of disposition seen across situations. The characterization of this particular combination as representing Affect lies in the relationship of Extraversion and Neuroticism to emotions. Extraversion reflects a personality domain oriented towards positive emotions often associated with an outwardly positive social orientation, while its negative pole would reflect an inward social orientation related to more negative social emotions such as anxiety and shyness. Neuroticism refers directly to the proneness towards experiencing emotions like anger, fear and depression, while its opposite and sometimes replacement term for factor (IV) is Stability, expressing the low emotional lability towards negative emotions.





**Fig. 6.1** - Extraversion (I) & Neuroticism (IV) Circumplex Trait Structure -

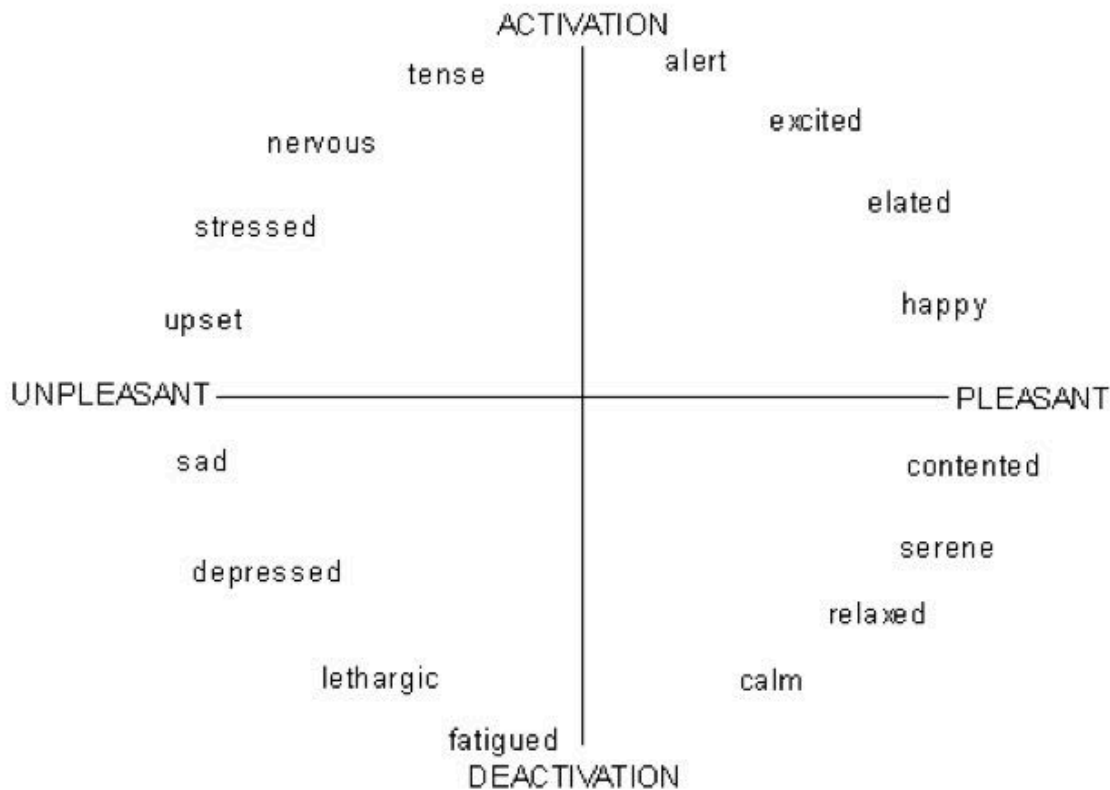
Source: Hofstee, de Raad, & Goldberg (1992: 149-153, Fig. 1)

The Affect Trait circumplex in **Fig. 6.1** show the continuum of trait terms which are composed of different weighting of Extraversion and Neuroticism, which Gurtman labeled as the Affect circumplex since Extraversion and neuroticism factors were partially defined by the emotions which accompany them as personality trait domains. However, as Plutchik (1980) notes, the labels used to differentiate between personality traits are often terms which also describe emotional states. The

circumplex method for computing the relation between trait terms by paired comparisons of emotion terms Conte (1975) produced a similar trait circumplex to **Fig. 6.1**, especially in the relation between terms in quadrants.

Much like personality traits, Plutchik pioneered circumplex methods applied to emotions (1980b) to understand the hierarchy and relation of emotion terms. However, rather than using Big Five domains for the two varying axes like Gurtman or 40 different emotion terms paired in every combination and rated to extract factors, Plutchik used the Semantic Differential (Osgood et al., 1962), a methodological analytic for measuring the dimensions of affect which define the connotative space of not just emotion terms, but of all semantic concepts across all languages studied. Plutchik found also that the semantic labels used to describe emotions when mapped to a circumplex, were related to similar circumplexes composed of labels of derivative traits, as well as terms for defense mechanisms, elicited behaviors, and functions (Plutchik, 1980).

An additional circumplex model for affect involves generically a dimension of value and a dimension of feeling category, which can vary independently of each other. Core Affect (Russell, 1980) is conceived of as a system for integrating sensory information from both the external and internal to produce a mental state which serves in predicting the goodness or badness of external events, agents, actions and objects, aiding toward adaptive behavior. The evaluative dimension of feeling is called valence, a spectrum which runs from pleasure to displeasure. The second dimension of feeling is termed arousal, which runs from activation to deactivation. These two dimensions are directly felt through experience and represent the basic building blocks of emotional feelings.



**Fig. 6.2** - Core Affect Circumplex - *Source:* Barrett & Russell (1999: 11, Fig. 2)

Core Affect can be conceived of as a heterogeneous set of feeling states across the two dimensions of valence (x-axis) and arousal (y-axis), which can be mapped in a circumplex arrangement, as in **Fig. 6.2**. The conscious experience of these two dimensions of feeling emerge from events and situations, representing the internalization of external events translated into an internal representation felt and reportable across these two component dimensions (Barrett, 2011). Core Affect, then, represents a certain type of meaning that guides behavior towards things that feel good (approach) and away from those that feel bad (avoidance). It is hardwired at birth and also homologous in mammals (Barrett, 2006b). In humans it is a pancultural human universal to communicate affect in the meaning of words for objects, actions and concepts (Barrett, 2006b). However, the Core Affect circumplex is idealized, while Core Affect is subjectively experienced differently by individuals in that their focus towards either Arousal or Valence may not be balanced (Feldman, 1995a) thus warping the ordered relations and locations between terms in the circumplex (Feldman, 1995b).

Yet, while Core affect provides a coordinate system for folk terms used to describe subjectively felt affect, emotions are more complex than simply feeling, involving categories that relate to the

interpersonal, involving behavior and function. While ubiquitous in the everyday world of experience, emotion is a “complex theoretical term whose characteristics can only be inferred on the basis of a congruence of various classes of evidence” (Plutchik, 1980a: 6), evidence spanning different areas of analysis and disciplines. Some studies of emotions, like personality traits, share the lexical hypothesis in that the many terms and labels for emotion can be analyzed to reveal cultural, social, psychological, and even physiological ontological realities.

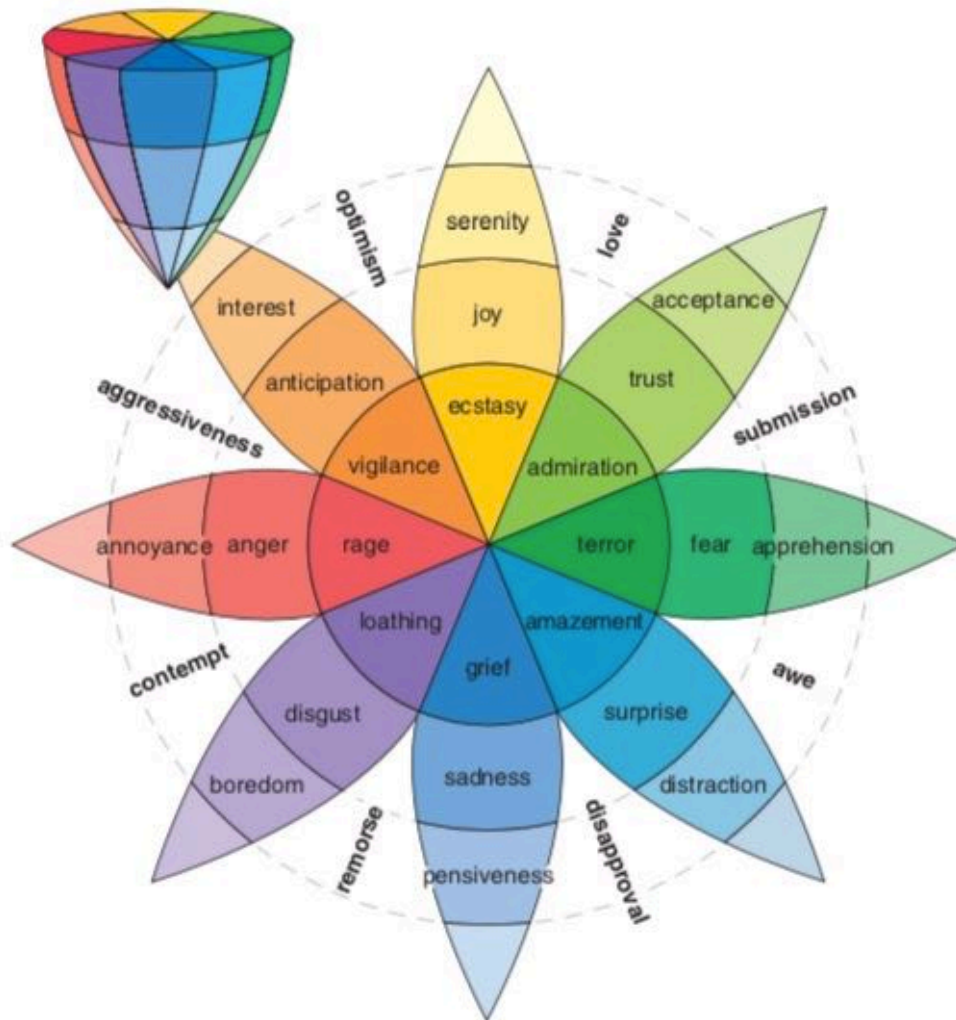
However, emotions are no set concept, but refer a process originating in a sequence of events involving the reaction to stimuli involving cognition, feeling and resultant behavior (Plutchik, 1980b). While Emotion has been the subject of study across many fields for a century and a half, no general agreed upon theory of exists, nor consensus of which emotions are universal or primary exists in which to explain emotions fully (Plutchik, 2001), although a small few appear across many lists of universal emotions (Ortony & Turner, 1990). Those most often identified in cross-cultural and primate studies yield the following: Fear, Anger, Sadness, Joy, Surprise and Disgust (see table in Kemper, 1987: 266). The diversity of Sociological, Cultural, Psychological, and Neurophysiological theories of emotion have yet to settle upon a universal framework.

The Psychoevolutionary Theory of Emotion (Plutchik, 1979) provides a good starting point for elucidating emotions, particularly because of its comprehensive breadth of connecting emotions with cognition, behavior, and evolutionary theory. For much of the twentieth century, each of these categories solely dominated social and biological scientific enterprises for epochal decades. However, Plutchik, as well as many other researchers and theorists, helped to reestablish emotion as sharing an equal if not vital footing with these other domains. Plutchik (1980b) provided a model which departed from purely cognitive theories of emotion appraisal in which cognitive processes acting upon evaluations are only part of an entire emotion process in which cognition is not separate from but intimately intertwined with emotion.

Like personality psychological theories, Plutchik proposed a core set of basic emotion terms representing whole domains of behavior, dispositions, and the like, related to common functional paradigms that proved vitally important for survival. These functions provided solutions to common problems of life, of which four existential problems of adaptation were identified which all organisms must negotiate (Plutchik, 1979). Such problems were thought to have produced evolutionary

changes to emotion subsystems that produced bipolar emotion pairs to help organisms evaluate whether a situation was good or bad, guiding the organism towards (approach) or away (avoidance) from behaviors in order to aid survival and reproduction. Plutchik theorized the four problems of life - Hierarchy, Territoriality, Identity, and Temporality -resulted in four diametrically opposed emotion pairs producing a taxonomy of eight primary emotions. The resultant eight primary emotions represented evolutionarily honed affective signals guiding adaptive responses: Fear-Anger, Surprise-Anticipation, Disgust-Acceptance, and Sadness-Joy, respectively (Plutchik, 1980a: 146-158).

Plutchik's (1962) early theorizing of a core set of primaries analyzable through semantic analysis, confirmed using circumplex methods (Plutchik, 1980), when combined with his psychoevolutionary theory (1979), led to Plutchik's (1962/1991; 2001) Emotion wheel, **Fig. 6.3** below. The Emotion wheel provides the exemplar candidates for describing a primary emotion taxonomy, which includes a multidimensional graphical representation of the relationship between eight primary emotion categories.



**Fig. 6.3** - Primary & Blended Psychological Emotions - *Source: Plutchik (2001: 349, Fig. 6)*

Plutchik's emotion model in **Fig. 6.3** was the first to incorporate several properties of emotions: intensity and blending. Emotional intensity is shown in the mild, baseline, and intense versions of primaries, which run outward along each "petal," which forms a circular intensity band around the wheel. The middle emotion band contains the eight primary emotions, while the more inner band represents those primaries at greater intensity, while the outer band represents a lower intensity. According to Plutchik's model, common emotions are blends of primaries, which similar to theories of color, produce recognizable mixtures. The primary dyad emotion terms between petals represent blends between adjacent primaries, while blends of other combinations of primaries yield tertiary and higher order blended emotions, producing the beginnings of a systematized set of blended emotions of varying intensities on the path towards an emotion taxonomy.

Secondary emotions are produced by conscious mental representations of social events, both verbal and non-verbal, activating a number of neural sensory cortices (e.g. visual, aural) to model situations involving the self and others (Damasio, 1995). Secondary emotions act as markers which flavor social concepts either presently experienced or reconstructed in memory, emphasizing aspects of social situations, events, people, etc previously learned which guide in predicting the best course of action in future interaction. According to the Somatic Marker Hypothesis (Damasio, 1995), the gut feelings of secondary emotions guide decision making through the estimation of probable outcome. Somatic (body) feelings mark “real, imagined, or anticipated outcomes of social relations” (Kemper, 1978: 48). Negative feelings help to winnow out possible social actions that may cause social harm or damage personal status, while positive emotions act as beacons for social actions which perform social good and increase personal status.

The Somatic Marker Hypothesis helps to explain how emotions assist reasoning and decisions making. Cold rationality without such markers yields behavior which resembles sociopathy or psychopathology, as in the case of patients with damaged emotion centers, i.e. Phineas Gage (Damasio, 1995). The presence of such markers assists cold rationality in narrowing social responses from the diverse universe of possible responses to improve accuracy and efficiency of social decisions (Damasio, 1995). It also helps to explain how the possibility of future positive payoffs despite a current negative assessment of a present scenario, such as in the case of delayed gratification, where an initial negative payoffs is endured for the chance of some future benefit which far outweighs the endurance of immediate negativity (Damasio, 1995).

Somatic Markers are continuously learned, acquired during socialization and experience, but continuing throughout life. They include internally generated individual preferences or dispositions oriented towards survival, reduction of unpleasant body states, and the exploitation of pleasure seeking. They also include externally imposed social norms enforced by parents and adults when young, through punishment and reward, as well as those followed personally when internalized as social conventions and personal ethics (Damasio, 1995: 179). Thus, feeling rules of a particular culture will shape social rules guided by which emotions are valued. We shall see that some cultures pay particularly close attention to some emotions which other cultures either ignore or avoid as taboo.

Emotions can be classified along several different scales or properties which help in classifying “families” of emotion. Valence, also called hedonic valence or hedonic tone, is evaluative and denotes a feeling of pleasure or displeasure. Activation measures the strength of the felt intensity of emotion above neutral from baseline or in comparison with a previous emotion state. Valence and Activation together make up Core Affect, the psychological component of emotion, in which people feel good or bad, energized or enervated (Russell, 2003). Emotions are generally short lived, can occur in successive or overlapping fashion, and can vary widely in their anticipation or dissipation. Moods are longer term emotional states, which can influence behavior and motivational states, while temperament characterizes a base emotional disposition connected to personality, which also effect behavior. All of these can influence the salience and meaning of emotion.

Emotions can be experienced as feeling states informing about interaction with others, whether from direct interaction or mere contemplation of such. These tend to be brief and may serve as direct initiators to automatic behavioral changes (Baumeister *et al.*, 2007). Emotions can also serve as feedback from automatic affective responses which serve adaptively to not directly change behavior, but rather provide emotional information that stimulate conscious reflection, where insights can be made to understand why things happened and to learn from mistakes and social misdeeds (Baumeister *et al.*, 2007). Anticipated emotions arise out of feedback emotions which have been encoded (learned), which serve then as motivators towards more adaptive behaviors via approach and avoidance, regulating choice and goal pursuit (Baumeister *et al.*, 2007).

These core emotions represent automated biophysical reactions to external stimuli oriented towards threat defense, occurring nearly instantaneous, with inflexible & recognizable patterns of response, i.e. the Fear response. They help to define social situations and provide stimuli drawing people towards affiliation or repelling them away from each other (Keltner & Haidt, 1999). These core emotions are automatic, meaning they are instinctually displayed, difficult to fake and even more difficult to suppress, most of which we would recognize through universal facial displays (Ekman, 2003). However, innate primary emotions are generated by limbic system circuitry, namely by the amygdala, anterior cingulate and hypothalamus, activating the body via the endocrine system (via the bloodstream) (Deacon, 1997). These also precede cognitive awareness (Deacon, 1997).

Critiques of the psychoevolutionary model include its lack of explaining the origin of social emotions,



as well as lacking the connection of emotion with the dynamics of social interaction, instead focusing on the psychological and behavioral aspects of emotions (Kemper, 1978). The psychoevolutionary model includes only four dimensions of interaction, considered to be problems of life, which limit its ability to be universal across all behaviors, “as if to suggest that other dimensions are unnecessary or incidental for a comprehensive classification system” (Thamm, 2007:13). The psychoevolutionary model, however, has contributed “the dimensions of polarity, valences, mixed emotion categories, compounded emotions, intensity, analogy, and the possibility of a dictionary of emotions” (Thamm, 2007). What also sets it apart is its explanatory framework for the pairs of primary of emotions that emerged from processes involving cognition & behavior triggered by recurrent situations which were so common as to have made the emotional markers of those situations innate. While other theories of emotion similarly propose a small set of innate, primary emotions, the set of primary emotions is hardly agreed upon (Ortony & Turner, 1990), nor for that matter are primary emotions even accepted by all theories (cf Barrett, 2015). However, the Psychoevolutionary Theory of Emotion provides a concise yet comprehensive model which can serve as a good start for the exploration of emotion primaries and secondary blends.

Another model of primary affects, numbering seven instead of eight primaries, must be mentioned and must be reconciled with Plutchik’s primaries. Emanating from the study of cross-species affective neuroanatomy, a core set of primary brain affect programs arise from distinct brain regions that reflect primal emotional affects motivating behavior and producing subjective feelings (Panksepp, 1998). Humans are said to share a core set of seven affective programs with mammals, while a smaller set are shared with all vertebrates (Panksepp, 1998). The basic affective programs are RAGE/Anger, FEAR/Anxiety, PANIC/Sadness, SEEKING/Exploration, CARE/Nurturance, PLAY/Social Joy, and LUST/Eroticism (Panksepp, 1998). They share some resonance with Plutchik’s primaries, with the three negative hedontically valenced affective programs providing matches, as well as also sharing a focus on their evolutionary emergence from common problems of life. However, these are envisioned as neurophysiologically more primitive in that they are not cortically driven (ie, by the more recently evolved higher brain processes in the cortex), but rather represent primary-process level affect circuits at the subcortical level (Panksepp, 1998). Primary- process level affects can be divided into sensory affects involving exteroceptive sensory pleasure and pain, homeostatic affects involving interoceptions like hunger or thirst, and emotional affects guided by intentional action (Panksepp, 1998). Their details rely heavily upon neuroanatomy, which this study

will cover in later chapters.

The primary affects represent competing drives which may be activated by higher level affects recognized as emotions. These emotions help to contextualize the moment and provide information for which to choose action. The emotion process described by Plutchik results in action selected to deal with the present situational context, “action that is adaptively related to the evaluation of the stimulus event” (Plutchik, 1980b: 14). The evaluation of the stimulus event is often accompanied by expectancy, which focuses attention on various aspects of the situation in order to glean important information which can lead to adaptive action. The emotion processes related to expectancy can be better understood through a medium that is specifically human and found across all human cultures, a medium which may have played a significant role in the evolution of humans, music (Mithen, 2005).

# CHAPTER SEVEN

## Emotion & Expectation

*“Emotional expressions help individuals know others’ emotions, beliefs, and intentions, thus rapidly co-ordinating social interactions...emotional communication evokes complementary and reciprocal emotions in others that help individuals respond to significant social events...and emotions serve as incentives or deterrents for other individuals’ social behaviour.”*  
*Keltner & Haidt (1999: 511)*

Expectations play an essential role in social interaction because they prepare the actor for behavior. We generally have expectations for ourselves and others when we interact. These expectations come from socialization learning about behavior norms and from experience with others generally and also with specific others. When we engage in interaction and our expectations are met, it provides us with satisfactory emotions. However, when our expectations are not met, we may experience negative emotions, which can vary in intensity depending on how strongly we felt towards those expectations and to what degree they were not met. The expectations function as a way of managing our emotional selves, preparing for certain expected emotions generated by social interaction.

There are two basic ways in which the subjective experience of emotion influences behavior (Fessler, 1999: 19). In the first, following some event, an emotion is produced which causes one to act. The intensity indicates the significance of the event stimulus and contributes to the level of response, while the hedonic affect determines which direction (toward or away) the responsive act should be. The first style reacts to an emotion and can be thought to be a defensive mode. This style is *reactionary* and can be modeled as:

EVENT -> EMOTION -> ACTION

The second style is affected by learning, which seeks to act in order to produce certain feelings, acting in order to shape events, with emotion influencing action before it is experienced. The hedonic affect

determines whether the emotion is a goal or anti-goal while the intensity matches the significance of the emotion. This style is *responsive* and can be modeled as:

#### ACTION -> EVENT -> EMOTION

The learned responsive mode is a more evolutionarily advanced model guided by learning, which allows one to be predictive rather than reactive. This style contributes towards emotions as motivational and goal/anti-goal states (Fessler, 1999).

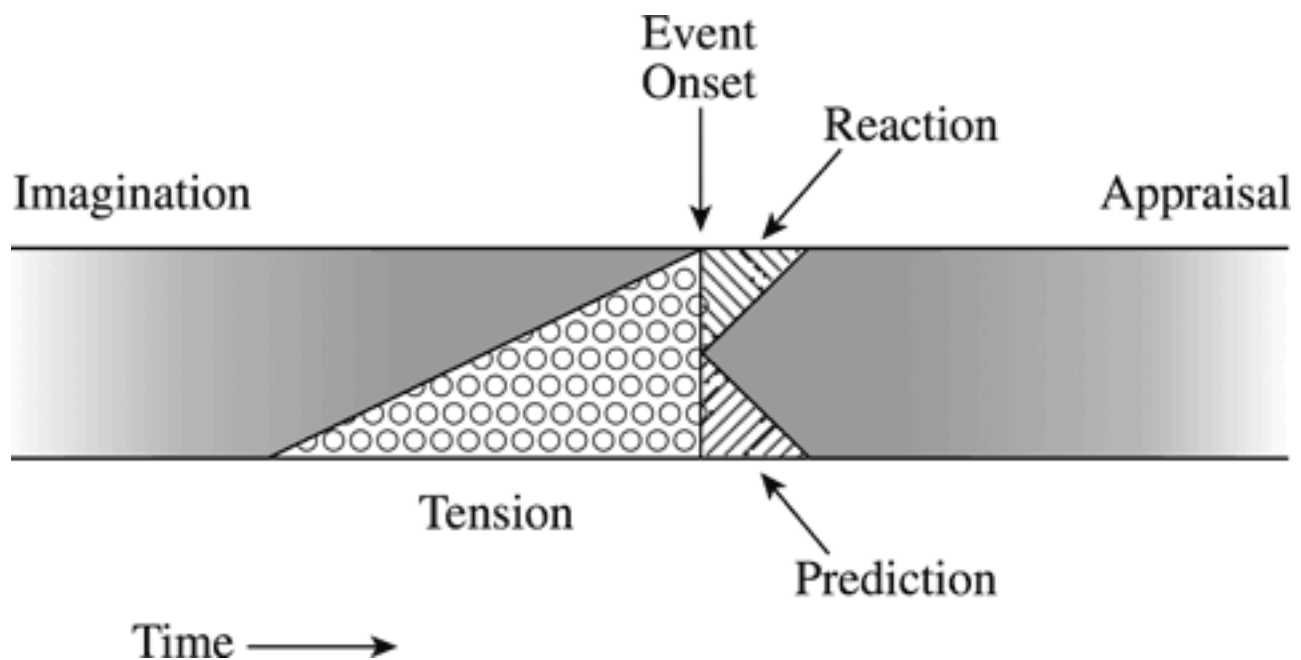
Goals can be thought of as motivations for the avoidance of a negative outcome (anti-goal) or approaching a positive outcome. Over time, these become regulatory mechanisms in which we engage in one or the other style, although they differ in outcome (Heimpel *et al.*, 2006). Avoidance goals tend to be less optimal regulatory structures, tending towards negative outcomes and more often evoking “threat appraisals, anxiety, controlled volition, and other negative processes”, resulting in the absence of any positive outcome (Heimpel *et al.*, 2006). Additionally, “avoidance goals in achievement have been linked to low enjoyment and fulfillment, perceptions of low goal progress, low job satisfaction, and low subjective well-being,” as well as high fear of failure and insecure attachment (Heimpel *et al.*, 2006:1296). Approach goals, on the other hand, provide a positive goal to work toward and generally have the opposite effects on achievement and avoidance. These two styles are correlated with self-esteem, a predictor of which emotion management paradigms people use, with approach goals used more often by those with higher self-esteem and avoidance goals more often by those with lower (Heimpel *et al.*, 2006).

Interestingly, the study of emotion in music provides an empirical model of expectation and emotion, revealing a deep structure used to anticipate events and limit surprise (Huron, 2006). Huron offers a theory using the acronym ITPRA to model five steps of emotion generation in music, where pre- and post- stages include steps to model, prepare for, predict, react to, and assess aural events in order to be more adaptive in the environment. Each of the steps represent expectation-response systems serving different adaptive functions (Huron, 2006).

The ITPRA model includes a pre-outcome stage preceding an event representing responsive behaviors. It begins with the Imagination (I) response, which involves thinking about possible future

events to help guide behavior towards desirable and away from undesirable outcomes. This is possible because thinking about future behavior produces muted versions of emotions which act as positive or negative motivators of behavior. These emotions are felt and provide motivation to change behavior toward adaptive outcomes, including delayed gratification, which delays reward now for greater reward later. Imagining occurs over a long period of time preceding events.

The Tension (T) response occurs shortly before an event, where the body prepares for anticipated events by adjusting arousal based on the uncertainty of the situation, such as gearing up defensively in fight/flight/freeze. The tension stage also involves the focusing of attention as the mind prepares for the anticipated event. Both arousal and attention are accompanied by physiological changes that are timed to meet the moment of an event. The physiological arousal from tension results in stress, even in the case of tension from positively expectations. The degree of stress can be exacerbated by the uncertainty of the timing and details of the outcome of the event. The tension stage occurs typically just before the event to conserve energy which can be costly for high expenditures of arousal.



**Fig. 7.1** - ITPRA Model of Musical Expectation - *Source:* Huron (2011: 17, Fig. 1.1)

The Post-outcome stage begins immediately after an event. The Prediction (P) response occurs at the onset of an event, representing some reward or punishment for accurate expectation, which likely manifests at the neurophysiological level as a release neurotransmitters triggering the nervous system (Huron, 2006). It is at this stage which emotions are experienced, either positively or

negatively valenced depending on the expectation and outcome. If the stimulus is expected, the emotion is likely positively valenced, while if unexpected, the emotion generally negative. This stage is transient, lasting a brief amount of time.

The Reaction (R) response co-occurs with prediction responses directly and rapidly after an event (~120ms), generating a specific somatic bodily response lasting several seconds. A reaction generally results in an unconscious defensive or protectively oriented response. It is instinctually evoked by the event, although it too can be learned. Some automatic reaction responses act like reflexes reflecting automatic motor responses, while others are more complex and evoke the activation of learned behavioral schemas that have become second nature.

Appraisal (A) responses follow prediction and reaction responses far more slowly, evolving consciously over time. Appraisals represent a contemplative and reflective response of the previous four responses, remaining independent of reactions and subject to revision. Thus, negative responses can be revised by positive appraisals, such as when someone reacts to a surprise event negatively but then realizes with contemplation that it was a false alarm, appraising it in another context. Appraisals represent learning through reinforcement.

Extensive analytical evidence from cross-cultural musicology supports the ITPRA paradigm, and this emotional musical emotional system is universal regardless of the tonal or cultural system (Huron, 2006). Importantly, it can be generalized to represent the psychological system used to model expectation to prepare the body for future adaptive behavior (Huron, 2006).

While the expectation and expression of emotions are universal across all cultures, the situations which generate them and their particular meanings and value are culturally determined. Culture provides the context and connotation in which emotions serve to achieve certain cultural goals, representing collective intentionality. Cultures display differing patterns of emotional expression, valuing some patterns and not others, resulting in certain behaviors being favored over others. Thus, emotion tends to result in the differential patterning of social behavior across cultures. However, because of the universality of our primary and at least some secondary emotions, great similarity across cultures can also be found, which suggests a universal structure to emotion underling human behavior.

## CHAPTER EIGHT

### Power-Status & Emotion Classification

*“Our conviction is that while power and status are the important analytic dimensions of social relations and in a sense represent phylogenetic continuity, culture and social organization, not genes, determine overwhelmingly what particular mix of power and status relations will prevail in any human group. The most important route between the sociological, psychological and physiological levels proceeds, so to speak, from the outside in.” Kemper & Collins (1990)*

The sociology of emotion is a rather recent phenomena, as traditional sociology through the 1960's tended to view feelings and emotion “as some irrelevancy or impediment to getting things done” (Hochschild, 1975: 281). In the explanations for why people behave the way they do, accounts of impression management and presenting oneself when interacting (Goffman, 1959) tended to focus upon “cognitive” calculations rather than structural ways in which feelings and emotions influence social behavior, which were ignored within sociology (Hochschild, 1975). It would be several decades until emotion and affect were recognized as a type of cognition, influencing sensory perception and consequently behavior (Duncan & Barrett, 2007). Missing then from sociology was how feeling influenced behavior and decision-making in structuring relations (Hochschild, 1975). However, shortly thereafter in the 1970's, Kemper offered Power Status Theory of Emotion (PSToE) that expanded the account of interaction to be vitally influenced, shaped by, and central in the production of emotion based upon the structural dynamics of power and status between actors. At the level of microinteraction, competition and cooperation are generalized terms for the conflict and consensus in human face to face social interaction occurring over two universal dimensions, that of Power & Status (Kemper & Collins, 1990).

While other sociological approaches to define the dynamics of relational human interaction typically focuses upon the division of labor, that represents purely technical behavior that is functionally differentiated and done by specialists, considered to be non-relational. When work or relations are

interdependent, social interaction is dependent on actors either voluntarily complying with one another (granting status) or using coercion (power) to induce compliance, or a mixture of both. Power is defined as the active ability of a social actor to compel or coerce another towards something they don't want to do, against their will. Examples can be "force, threat, withdrawal of benefits, manipulation, deception and other negative sanctions are tools of power relations" (Kemper & Collins, 1990). Status (Prestige) is defined as the passive ability to have others voluntarily comply to one's will through "deference, acceptance and liking. It involves the voluntary provision of rewards, benefits, and gratifications without threat or coercion. The ultimate form of status accord is **love**" (Kemper & Collins, 1990).

Power and Status Theory posits the structural relations between these two dimensions produce structured emotions as the result of one's either losing or gaining power, or losing or gaining status. Emotion is defined as "relatively short-term evaluative response essentially positive or negative in nature involving distinct somatic (and often cognitive) components" (Kemper, 1978: 47). Somatic markers (Damasio, 1995) include physiological changes which are directly observable including face flush, heart rate variability, pulse, etc., while cognitive components include verbal markers describing how one feels. "A very large class of emotions results from real, imagined, or anticipated outcomes of social relations" (Kemper, 1978: 48).

*"Fear results from interaction outcomes where actors are subject to the power of others because that power is greater than their own. Anger results from interaction outcomes in which expected, customary, or deserved status has been denied or withdrawn by another actor who is seen to be responsible for the reduced status. Depression results from interaction outcomes in which status has been lost or denied, but where the actor deems him- or herself irremediably responsible for the loss or incapable of retrieving the desired benefit. Satisfaction results from interactions in which the power outcome is nonthreatening and the status outcome is according to what was desired or expected." Kemper (1987: 275)*

Power and Status theory posits that social structural outcomes are linked to physiological outcomes via emotions (Kemper, 1978, 1987). Kemper extends the Funkenstein hypothesis (1955) by proposing that differential autonomic activation and inhibition via neurochemical modulators match a basic set of social behavioral outcomes. The Funkenstein hypothesis posits that epinephrine (E) is



associated with Fear states, while norepinephrine (NE) with Anger states, both governed by the sympathetic component of the autonomic nervous system (ANS). Kemper extends that hypothesis by offering that acetylcholine (ACh) modulates parasympathetic activity of the autonomic system, modulating Satisfaction and Depression. These four functional autonomic modes very generally produce primary emotions, and that the Power and Status dimensions are theoretically linked to (E), (NE) and (ACh) (Kemper, 1987: 271-276).

A simple model of Power and Status relations shows that interaction can produce a wide variety of emotions based on the increase, decrease or no-change of a person's power or status (Kemper, 2006). When individuals exercise or gain power, they experience positive emotions like satisfaction, confidence and security, while the loss of power results in the experience of emotions like Anxiety and Fear. Gains and losses in status (prestige) similarly result in the elicitation of positive and negative emotions. "When individuals experience gains in prestige (or the receipt of deference), satisfaction and well-being are aroused, and they express positive sentiments to others, thereby increasing the flow of positive emotions and bonds of solidarity between givers and receivers of deference" (Turner & Stets, 2007: 11). Individuals blaming others for the loss in status cause feelings of Anger, Shame and Embarrassment (*ibid*).

Power and Status measure rank, where actors stand in relation to each other. The interplay between trying to elevate one's rank status by using power or by denigrating another provide the context of the different combinations of interactions that Power and Status describes. Kemper's theory posits the set of different combinations of potential Power and Status interactions between two actors produce a set of unique emotion categories, as well as describe the range of common patterns of atomic behaviors which accumulate as social structure. While the situations that produce these Power and Status interactions can vary across cultures, the emotion categories and social structure from these interactions are universal (Kemper, 2006). The system of power and status relations producing universal emotions can be systematically studied to understand the production of social structure (Kemper, 2006).

Thus, a Power & Status Theory of Emotion (PSToE) attempts to integrate constructionist emotion theory with this positivist account of primary emotions, by positing that secondary emotions are constructed from these primaries via "social definitions, labels and meanings to differentiated

conditions of interaction and social organization” through the process of socialization (Kemper, 1987: 276). It offers that microinteraction across two universal dimensions of social interaction produces a “large class of emotions results from real, imagined or anticipated outcomes in social relationships” (Kemper, 1978: 43). The Power & Status Theory of Emotion represents a “potentially testable theory” combining a small set of “physiological grounded primary emotions” with “secondary emotions” constructed from “primary emotional experiences” paired with “the secondary labels attached to specific circumstances eliciting the primary feeling or feelings” (Thoits, 1989: 321).

Power and status are found to correspond to similar basic dimensions found in many different analytic domains across disciplines, from studies of small group interaction, neurophysiology, autonomic response, psychology and semantics (Kemper & Collins, 1990). Power and status are found to underlie micro-, meso- and macro- levels, as “the two-dimensional model can be usefully applied not only to cross-cultural comparisons among whole societies, but also to the comparison of cultures among classes and occupational and professional groups” (Kemper & Collins, 1990:48).

At micro-levels (the level of individual psychology), Power and Status relational dimensions can be found as underlying the relational aspects of several key analytics within psychology. While behavioral psychology focuses upon the effects of conditioning upon behavior, the punishment and reward experienced by individuals can be seen as social relational when considering the antecedent or corresponding punishment (using power) or deference (granting status) paid by the other social actor in dyadic interaction (Kemper & Collins, 1990). So too is Power and Status found in clinical psychology’s focus upon Freud’s Thanatos and Eros (Kemper & Collins, 1990). Power and Status have been correlated with two of personality psychology’s Big 5 domains through their correlation with the IPC (Pincus *et al.*, 1998)(DeYoung *et al.*, 2012). Extraversion and Agreeableness are domains specifically relating to the interpersonal realm, while the Big 5’s Openness/Intelligence, Neuroticism, and Conscientiousness are traditionally viewed only as technical or task oriented.

Power and status also scale upward to macro conditions, correlating with Plural Rationality Theory’s Grid and Group dimensions, where Grid represents “the power dimension of society,” while Group represents an aspect of Status as the “acceptance or rejection of self and others based on the single criteria of membership” (Kemper & Collins, 1990: 47). Evidence of power and status is even found underlying primate “agonic” and “hedonic” behavior (Kemper & Collins, 1990:44), which provides a

physiological basis for human study of power and status (Kemper, 2007). So too the Sociological theory of Weber's (1946) Class, Status, Party triad includes Parties in which Political Interest groups compete using power to gain control over the polity and Status Groups which coalesce around the affective commitments between members which binds them together, while Class reflects the non-relational technical sphere (Kemper & Collins, 1990: 51-52).

Some fields use different terms, while other use similar terms with slightly different meanings. Conflicting definitions can be disambiguated to show how Power and Status dimensions converge on behavior resembling either coercion and competition, or voluntary cooperation and liking, respectively (Kemper & Collins, 1990).

Paradoxically, evidence from social cognition studies and the SCM find that structural features of interpersonal relationships determine stereotypes having the opposite relationship with Power and Status dimensions. The perception of intergroup competition and status relations result in warmth and competence stereotypes, respectively (Russell & Fiske, 2008). Fiske *et al.* (2007) shows a very high cross-cultural analytic correlation between Status and Competence (0.94 for Groups and 0.77 for individuals). The SCM pairs Status with Competence/Autonomy, while low status aligns with low Autonomy. From a social perception standpoint, the status-competence correlation implies that demographic status (gender, race, etc) depends on the character trait of competence, a pancultural stereotype since the SCM has been cross culturally verified (Fiske *et al.*, 2007). Similarly, Competition (power) causes stereotypes of Coldness while inversely related to interpersonal Warmth, corresponding to the high Group/Communion dimension (Fiske *et al.*, 2007).

This presents a dilemma, since Kemper's definition of Status seems to be orthogonal to the SCM's definition of perceived Status. Power and Status theory clearly links Status with the Group/Community/Warmth dimension due to its role in liking (synonymous with Warmth) and group membership (Community), while Power in the form of coercion or coldness used in social competition aligns with dislike (Coldness) and non-group (Individualist).

The paradox between these two different conceptions of Status can be resolved by considering the invisibility of some amount of Status being paid through coercion. While Status accord is theorized to be purely due to liking, deference is given in some combination of both status accord and coercion

(Kemper 1978). Oftentimes this coercion can be hidden in institutional forms of social structure, which obscures the source of Status paid. This skews perception of Status to such a degree that we associate it with Competence, along which Power is structurally aligned, while institutional coercive sources are invisible. Thus, our perception of Status and Power through social perception is skewed by our threat defenses of guarding against harm.

This bias is confirmed by the findings of the SCM, which indicate that evaluations of Coldness from use or potential use of power are weighted more heavily in evaluations of others, guarding against active harm, while passive harm from incompetence is less heavily weighted. We estimate other's Power and Activation level and evaluate their level of status from those two attributions, while we can sense our own activation and status implicitly and use power strategically to get what we need from others. Thus, we grant deference out of self-protection from harm, yet attribute it as Status and now Power, while we pursue Status through a combination of both interpersonal warmth and instrumental and strategic competence. Also, the SCM does not seem to differentiate between technical and purely relational interaction, which Power and Status theory clearly separates (Kemper, 1978). These two opposing views of Status have a clear solution, which lies in the evaluative process, along which Status is congruent.

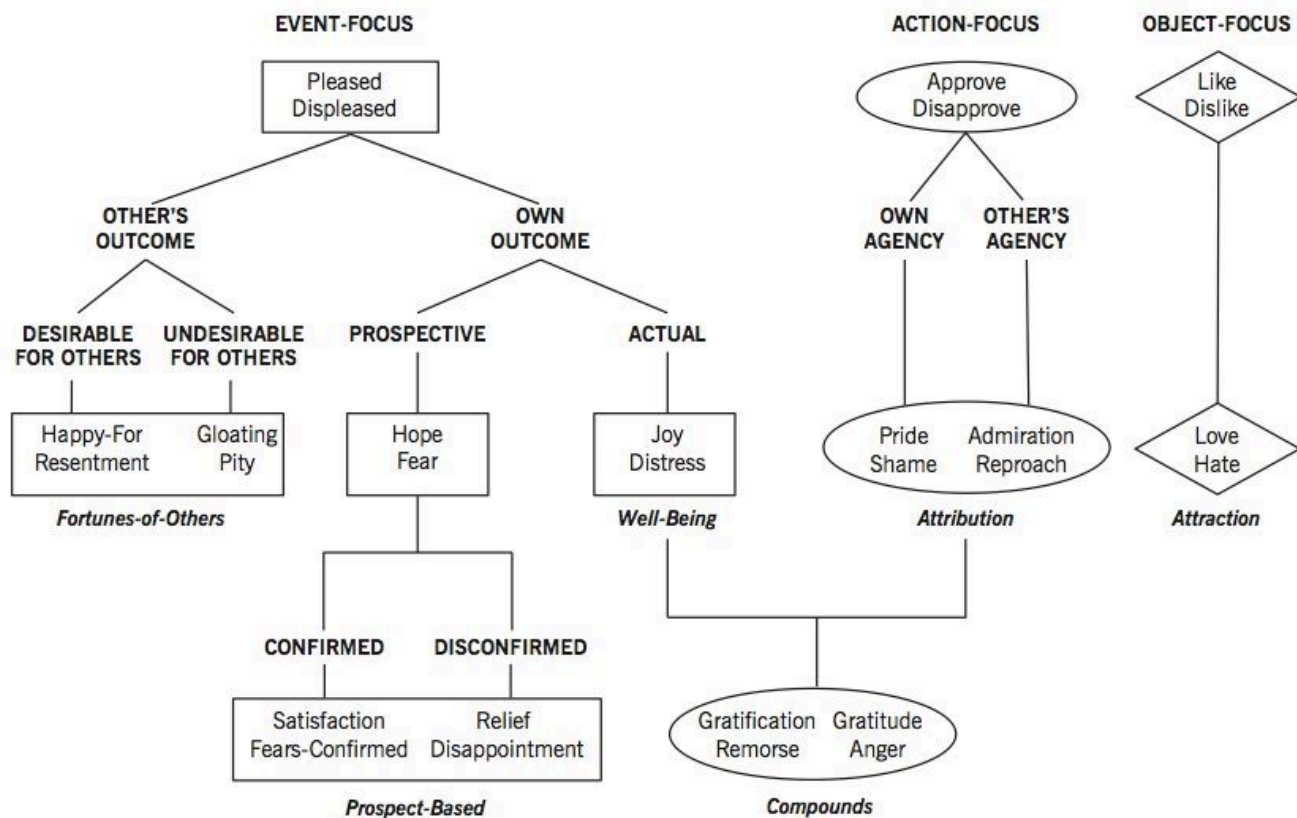
Status can be said to lie between Competence and Warmth along the diagonal representing Evaluation, which lies orthogonal to Power, running diagonally between Competence and Coldness, along the BIAS axis. SCM's social perception locating Status directly in line with Competence conflates some amount of Status due to coercion and the use of power, in varying combination of deference due to accord (liking-warmth). Pure Status accord would be free of coercion, directly opposite Coldness. We shall later see evidence supporting this hypothesis, placing Status along the diagonal running between Warmth and Competence, while Power would be situated orthogonally running between Competence and Coldness, aligning with SCM's BIAS dimensions. Thus, SCM's dimension of Coldness-Warmth would correspond to a range running from high Power/low Status to low Power/high Status, while the Incompetence-Competence dimension corresponds to a range running from low Power/low Status to high Power/high Status.

*“Thamm is able to create a periodic table of emotional responses that predicts which particular emotions emerge depending on appraisals of self and/or other with respect to*

*expectations and/or rewards and the degree of power and status (and powerlessness and statuslessness). Of all the theories reviewed in this essay, Thamm offers the most predictions about the specific emotions that will be aroused under varying social structural conditions of power/status and appraisal.” Turner & Stets (2006: 36)*

Thamm (1992; 2004) extends Kemper's Power & Status Theory of Emotion by proposing universal structures of human groups emerge from the social causes of emotion, whose structure can be systematically outlined via a “condensed symbolic notation” to summarize “complex structural configurations that predict each emotion” (Thamm, 2007: 19). Thamm presents a framework for integrating different emotion classification systems from psychological, cognitive, symbolic, interactional, evolutionary and social perspectives. Rather than a “prototypical approach” which explains emotions through resemblances characterized by Plutchik's psychoevolutionary model, Thamm uses a “dimensional approach” which takes the classical view that emotions can be differentiated by mutually exclusive conditions, although it is suggested that the two approaches are “more complimentary than irreconcilable” (Thamm, 2007: 12). Thamm's model originates from the sociological tradition, where emotions are responses to social events which “arise out of behavioral and environmental preconditions” (Thamm, 2007: 16). A recent survey comparing the main theoretical approaches in sociological emotion theories states, “of all the theories reviewed in this essay, Thamm offers the most predictions about the specific emotions” (Turner & Stets, 2006: 36).

Thamm's model integrates non-classical appraisal theories of emotion, presenting a classification system which “includes both the appraisal and social dimensions and is defined as the process of actors appraising and responding to real or imagined focused social situations” (Thamm, 2006: 16). One appraisal theory highlighted by Thamm is the OCC model (Ortony, Clore & Collins, 1988), an early psychological model positing that emotions arise from evaluations of “significant psychological situations,” where evaluations are “implicit, automatic, and subcortical, as well as those that are explicit, conscious, and deliberative” (Ortony, Clore & Collins, 1988).



**Fig. 8.1** - The OCC Model of Emotion Categories - *Source:* Ortony & Clore (2006: 309, Fig. 13.1)

The OCC model demarcates the directionality of emotion, whether felt by Ego or by Alter, as well as postulating that meaning emerges for emotion labels and helps to differentiate different orders of emotion categories and emotion hierarchy (Thamm, 2007). The OCC model in **Fig. 8.1** shows emotion categories arising out of appraisals focusing on the outcomes of three different aspects of social action: an **event**, the **action** by an actor in an event, or upon an **object**. These different aspects result in differing dimensions of emotion categories arising from both initial implicit automatic evaluations, as well as further refined, controlled cognitive processes.

The OCC offers a model of emotional appraisals of social situations by borrowing from Balance Theory (Heider, 1958), a theory usually applied to cognitive attitudes and the general psychological motivation to seek interpsychic balance and consistency between actors and their attitudes. The OCC borrows from balance theory the triadic model for balancing socially shared emotions. Similar to balance theory's model, the triadic nodes consist of Ego (P) and Alter (O), while the other node is an event (X) appraised by both (Ortony, Clore, & Collins, 1988: 98-99). The OCC balance model posits the basic social emotion is like (+) or dislike (-) of the social other, represented by the triadic segment

between Ego and Alter (P->O). The other two segments of the triad represent Ego's appraisal of a social event/actor/object (P->X) and Alter's appraisal of the same (O->X). The OCC posits there exists a psychological motive to balance emotions between the three relationships. Using their example (Ortony, Clore, & Collins, 1988: 98), if John likes Mary (+), Mary dislikes an outcome of an event (-), and John feels sorry for Mary (-), the resulting emotion triad is balanced (+)(-)(-) in that the two negative valenced emotions cancel each other. If John were to gloat at Mary's dislike of the outcome of the event (+), a resulting imbalance would exist (+)(-)(+), since that would contradict John's like for Mary, and result in an overall negative imbalance.

The OCC's "seminal model for predicting emotions" stems from two types of evaluations, not meeting **Expectations** and receiving **Sanctions** for both Ego and Alter (Thamm, 2004: 193). Thamm (1992; 2004; 2007) provides an Expectations-Sanctions (E-S) paradigm of emotion construction which conjectures that expectations and sanction underly the universal forms for constraining social interaction (Thamm, 1992), aligning with Kemper's (1978) Power Status model of social structure, by creating substructures from normative constraints on behavior and prescriptions are distributed. These dimensions answer the following basic questions of a dyadic interaction- did each of the actors meet or not meet expectations?" and second, "did each of the actors receive rewards or not?" (Thamm, 2004). These two questions define two basic components of interaction, expectations towards compliance/noncompliance of behavior and sanctions representing reward or punishment for compliance/noncompliance to norms. Each set of questions produce specific emotions in each social actor during dyadic interaction, although neither actor may be aware of each actor's dimensions of expectations or sanctions. The E-S paradigm postulates expectations and sanctions as the basic dimensions used to "constrain and circumscribe the valence and amplitude of emotion" (Thamm, 2007: 14-15).

	SELF	OTHER
EXPECTATIONS	<b>CONDITION 1</b> <b>SELF EXPECTATIONS</b> I am about to meet (-+) or about to not meet (+-) my expectations?	<b>CONDITION 3</b> <b>OTHER(S) EXPECTATIONS</b> Other(s) is about to meet (-+) or about to not meet (+-) my expectations?
SANCTIONS	<b>CONDITION 2</b> <b>SELF SANCTION</b> I am about to receive (-+) or about to not receive (+-) rewards?	<b>CONDITION 4</b> <b>OTHER(S) SANCTION</b> Other(s) is about to receive (-+) or about to not receive (+-) rewards?

**Fig. 8.2** - Expectations & Sanctions (E-S) of Ego and Alter - *Source*: Thamm (2004: 196)

Evaluations of expectations and sanctions produce structural emotion categories, which Thamm models using social dyad as the most basic unit of social action between self and other, with emotion categories typified as from the self's perspective, unless otherwise noted (Thamm, 1992). Success or failure of meeting expectations or earning rewards are noted by either + (success) or - (failure), representing positive or negative valence of the structural emotion category produced for the self. Evaluations are of the structural nature of the social action, not of specific content, as it is posited that "structural responses are what defines an emotion" (Thamm, 1992: 651).

Thamm (1992) integrates the Expectations-Sanctions (E-S) paradigm with Power and Status dimensions by mapping typical Power and Status type behaviors as either actions taken by an actor (expectations) or prescriptions placed upon an actor (sanctions). Expectations for using Power would include actions which force another to submit to one's will, using either direct or indirect means, from assault & manipulation to deception and lying, while conversely, powerlessness would include submission, restraint and passivity (Thamm, 2004). Status expectations would include conformity, deference, acceptance, cordiality, while statuslessness includes unfriendliness, unsociability and negativity (Thamm, 2004). As for sanctions, Power sanctions include gaining rewards, punishing others, withholding rewards and winning. Powerless sanctions result in no rewards, punishment, and losing. Status sanctions include receiving approval, respect and



acceptance where conformity is rewarded. Statusless sanctions include disrespect, low esteem, punishment and group rejection.

		POWER	POWERLESS
ACTOR'S ACTIONS		Controlling, Commanding, Coercive, Authoritative, Imposing, Withholding, Strong, Potent, Forceful, Constraining, Excluding, Hurting, Punishing, Lying, Manipulating, Deceiving, Assertive, Achieving, Aggressive, Leading, Threatening, Assaulting, Dominating	Controlled, Submissive, Order-taking, Coerced, Complying, Weak, Involuntary compliance, Down, Passive, Subordinate, Restrained
ACTOR'S SANCTIONS		Gaining rewards, Withholding rewards, Punishing others, Winning	In-effective, Deprived of rewards, Impotent, Weak, Fear of rewards Being withdrawn, Hurt, Punished, Rewards withheld, Un-achieving, Losing, Un-rewarded, lost rewards

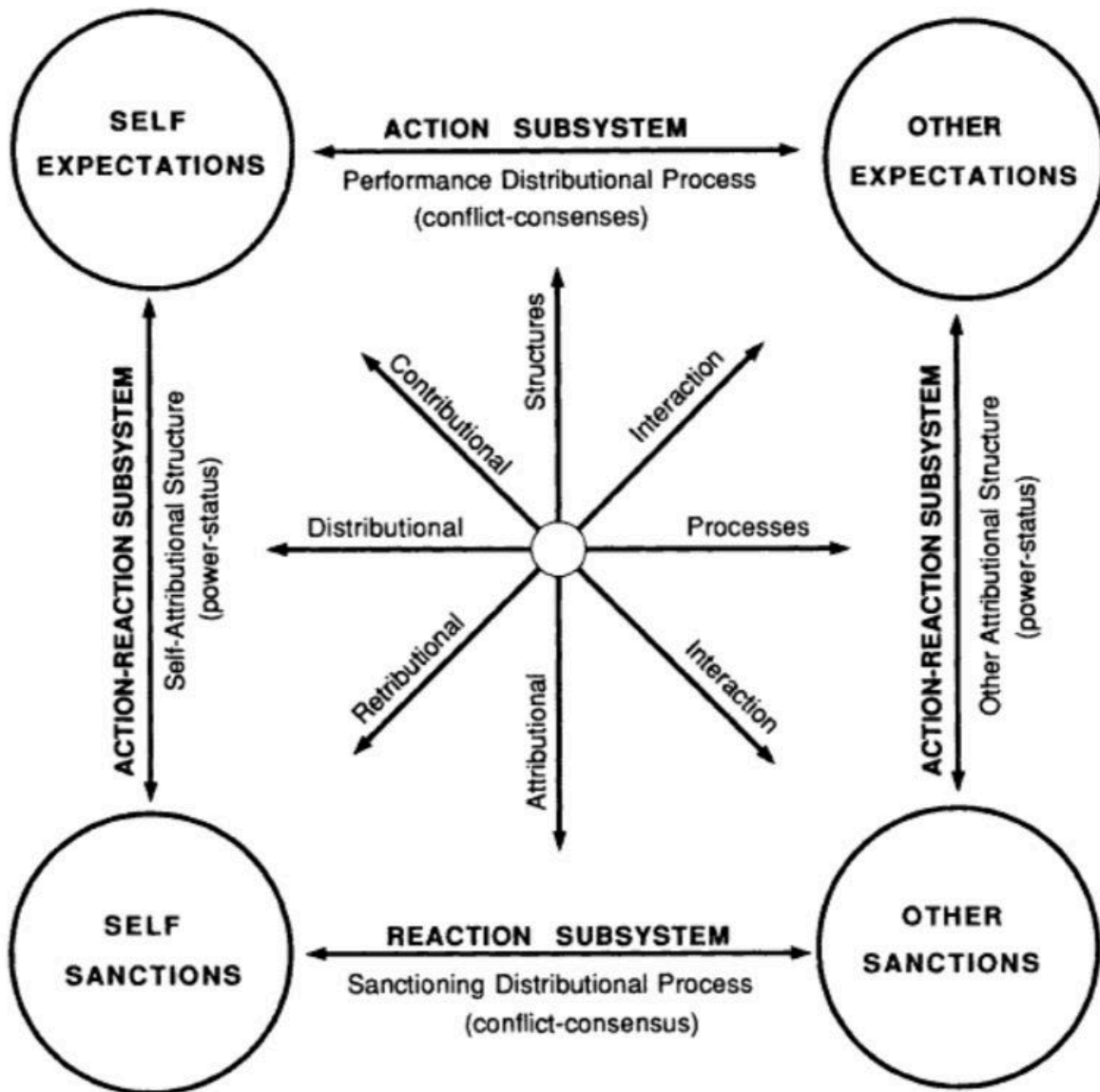
		STATUS	STATUSLESS
ACTOR'S ACTIONS		Induced, Integrated, Providing services, Making contributions, Good, Admirable, Voluntary compliance, Supportive, Beneficial, Conferring rewards, Deferring, Conforming, Accepting, Friendly, Pleasant, Sociable, adaptable, Agreeable, Helpful, Genial, Cordial, Giving, Contributing, Positive	Un-likeable, Unfriendly, Unpleasant, Unsociable, Un-adaptable, Un-agreeable, Unhelpful, Uncongenial, Un-cordial, Voluntary non-compliance, Not giving, Failure to make contributions, Negative
ACTOR'S SANCTIONS		Receiving approval, Rewarded for contributions, Admired, Deference, Respect, Conformity rewarded, Group acceptance, Accorded positive sanctions, Rewards given	Low esteem, Disapproval, Punished for not contributing, Disrespected, Receiving punishment, Lack of deference, non-Conformity punished, Group rejection, Accorded negative sanctions, Punishment given

		POWER	POWERLESS	STATUS	STATUSLESS
ACTOR'S ACTIONS		Negative	Positive	Positive	Negative
ACTOR'S SANCTIONS		Positive	Negative	Positive	Negative

**Fig. 8.3** - Power & Status - Actions & Sanctions - *Source: Thamm (2004: 2004: 198-199)*

Power and Status actions and sanctions can be characterized as either positively or negatively valenced behaviors. Valence provides the most easily distinguishable and most fundamental dimension in emotion grouping (Thamm, 2007: 21). By simplifying the E-S behaviors as simply positive or negative yields a generalized model for comparisons of power, powerlessness, status and statuslessness providing a mutually exclusive set of 16 generic Power versus Status combinations. Each combination includes expectations and sanctions for self and other. An actor can appraise any one of these four conditions, which when left unappeased results in a “affective neutrality” (Thamm, 2004). Emotions result from the appraisals, so emotions can range from simple one condition appraisals, say of self’s expectations, to compound multiple appraisals of both self and other.

The integration of Power/Status with E-S dimensions produces a universal structure for **predicting** distinct emotions independent of social content, describing the universal production of emotions from social interaction (Thamm, 2004). Social actors assess each other’s Power & Status attributes, form expectations of behavior for Ego and Alter, and react according to whether behavior met expectations and was properly sanctioned during interaction. Good feelings arise when each confirm each other’s expectations, while conflict can arise when expectations are not met. Interestingly, even if met expectations are unfavorable or negative, it would result in some satisfaction, the result of confirmation bias demonstrating that correct prediction is rewarded (Thamm, 2004). Different combinations can be charted out based on different relational aspects to reveal the many different social emotions emerging from power and status relations, which can be and has been empirically tested (Thamm, 2004).



**Fig. 8.4** - The Emotion Social-action System - *Source:* Thamm (1992: 655, Fig. 2)

The E-S paradigm in **Fig. 8.4** shows the social structural relations between actors in a social dyad. Each relation represents a different comparison between aspects of social action. Certain relations may be more salient for a particular interaction, which if attended to inferentially, produces the effect of a structural emotion category. Attending to multiple aspects produces hierarchically blended emotions, which are composed of combinations of emotion categories.

**Elementary** (E) emotion structures are simply for meeting expectations or sanctions, either of Self or Other. They are the primary components of structural emotions and can be combined to produce two-category comparisons. The comparative emotion structures may combine elemental emotion

categories with differing valences, leading to compound mixed emotions that are ambivalent or similarly univalent. The comparative structures come in three interaction “families” comparing different social relational dimensions.

**Attributional (A)** emotion structures compare an actor’s performance with sanctions. They reflect the power and status dimensions of the social substructure. They are the most basic comparison dimension assessed by a social actor in any situation. They result in emotions, in the case of Power, such as feeling manipulative, powerless, disgusted or compassionate. In the case of Status, they consist of feelings of honor, disgrace, admiration or disillusionment. In both cases, attribution emotions are sensed by self or read in others, independent of interaction, representing trait like attributions of persons. Thamm ties these attribution structures to similar emotion theories related to identity, power and status valences, and EPA potency and evaluation dimensions (Thamm, 2007: 26-28).

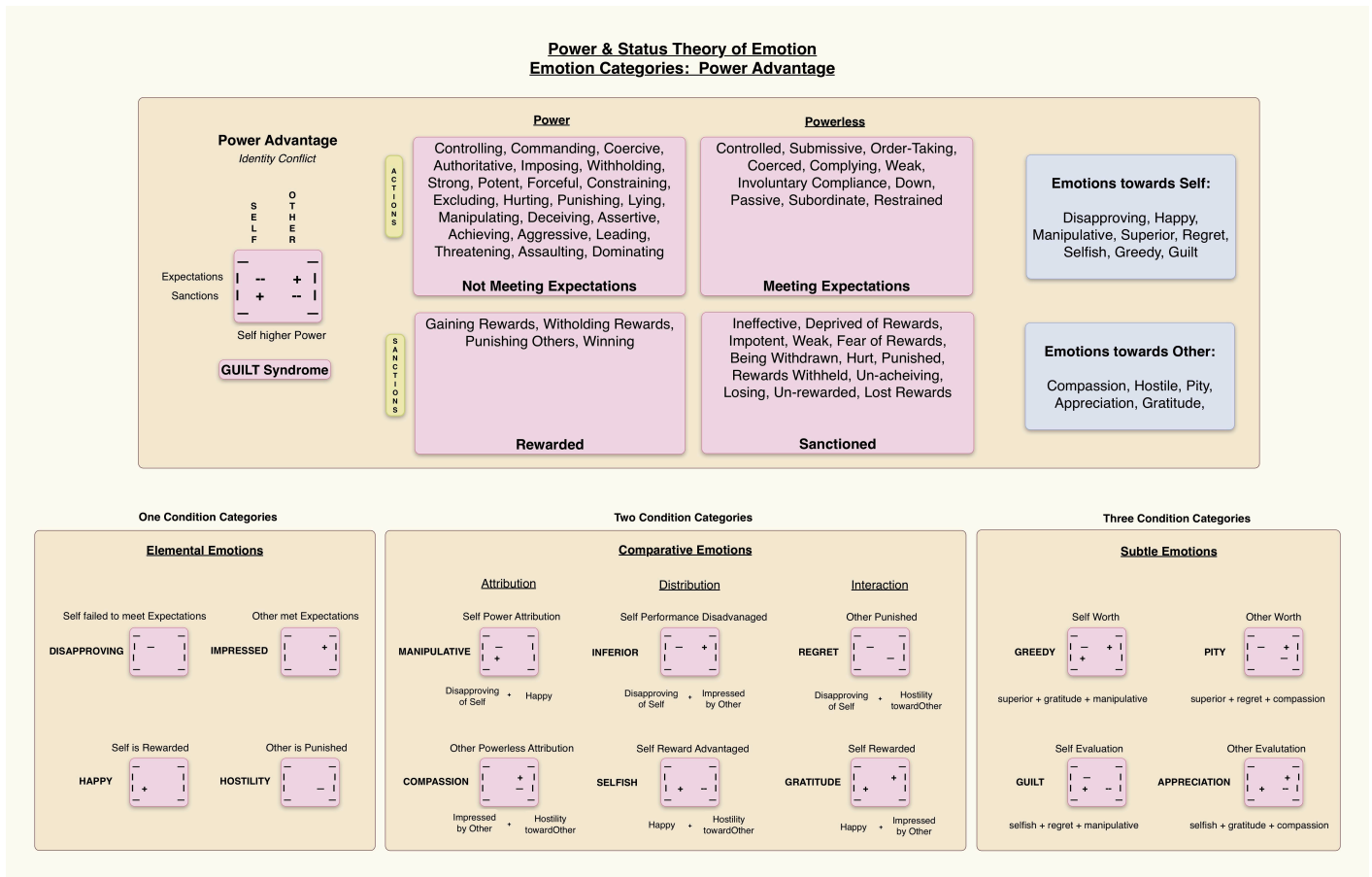
**Distributional (D)** emotion structures compare performance or sanctions between the actors of the dyad. When they agree and distribution is equal such as both meeting expectations, they result in consensus, and when not equal such as unequal distribution of rewards, they are characterized as conflict-producing. They result in a class of emotion categories involved in all hierarchical or ranking systems (Thamm, 1992). In the case of expectation performance distributions, consensus emotion categories can be both positively and negatively valenced. They produce conflict emotion categories as inferior, superior, jealous, and selfish while consensus emotions categories produced are proud, ashamed, joy and sorry.

**Interactional (I)** emotion structures compare balanced or imbalanced social exchange. Interactions can be either contributinal in which one’s performance results in sanction, or retributinal, in which sanction is given for the other’s performance. These are considered consistent if the sanction shares the same valence with the performance, or inconsistent if not. These structures produce emotion categories like anger, regret, gratitude and generous. These can be used to define both specific and general interaction identities, such as “good father” or “abusive person” respectively (Thamm, 2007: 29).

Thus, Thamm’s Expectations and Sanctions (E-S) paradigm pairs with Emotion and Social

orientation polarities, which also provides a concise model to compare with Interpersonal analytics. Thamm's model includes a condensed symbolic notation (combining **Fig. 8.2** and **Fig. 8.3**) to chart all the combinations of Power and Status interactions over the basic E-S paradigm using simple (+) and (-) symbols to represent the valence (evaluation) of meeting or not meeting expectations or rewarding or punishing in the case of sanctions. The notation represents emotion appraisals, not of social content, but of the structure of content which progressively differentiate different aspects of the structural relationship. These appraisals are always from the perspective of Ego, although the possible conditions from Alter's point of view are reflected by simply reversing the diagram columns. The total possible emotion structures that can be represented yield a total of 81 ( $3^4$ ), each of which it could be possible to identify with emotion labels (Thamm, 1992: 653). The actual count should be 80 ( $3^4 - 1$ ) emotion structures, arrived at from 8 one-condition elemental structures, 24 two condition comparison structures, 32 possible three condition subtle structures, and 16 possible four condition structures termed Syndromes.

The figure in **Fig. 8.5** below shows one of the 16 Syndromes, a Power Advantage identity conflict, where Ego has higher Power than Alter in a comparison between high Power and low Power types. Following the E-S paradigm, the basic notation uses the 2x2 matrix placing expectations and sanctions as the top and bottom rows respectively, of the matrix, while self and other are represented by the two columns. The different substructures of the diagrams (in **Fig. 8.4**) represent structural content from which emotion appraisals define an emotion (Thamm, 2007: 17). These substructures begin with the elemental emotion categories representing a single appraisals of expectation or sanction.



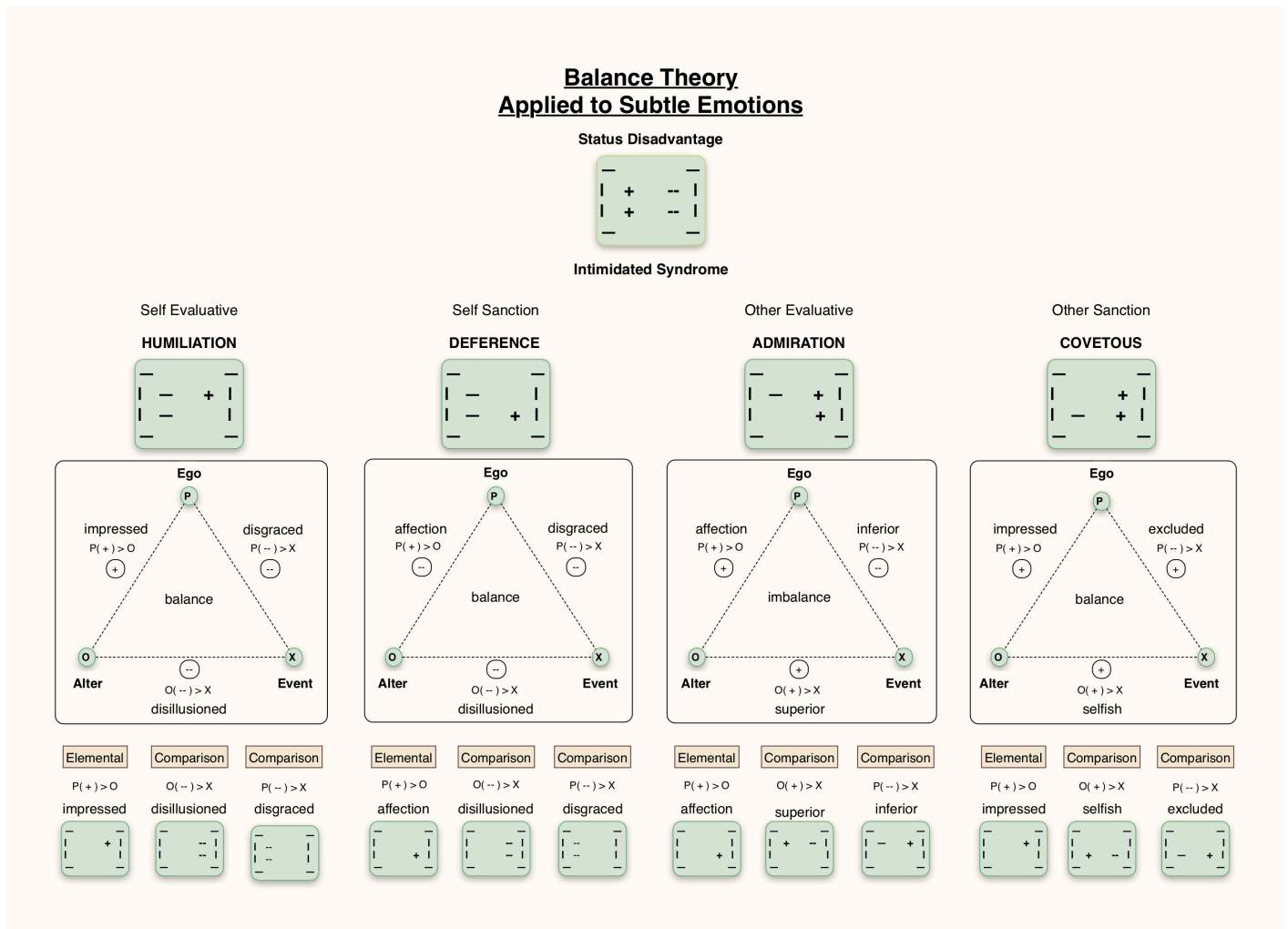
**Fig. 8.5** - Power & Status Theory of Emotion Categories of Power Advantage -

*Source: Thamm (2004, 2007)*

Each Syndrome would be comprised of **15** total ( $4^2-1$ ) emotion structures, many of which will be repeated across the other permutations of Power & Status. Besides the four elemental, one-category emotion structures, two-category emotion structures are produced by appraisals of a comparison between two elementary structures, producing the most commonly recognizable social emotions. The three-category emotion structures, termed Subtle emotions, are defined as composed of one each of attributional, distributional and interactional comparison structures. Subtle emotions have “virtually no literature” available for their analysis and their overlapping and undifferentiated structure make classification especially difficult (Thamm, 2007: 31). Their emotional components can be built up from the two-category triad of emotions which make up each three-category combination composed of an Attribution, Distribution and Interactional structure. Thamm suggests that for these subtle emotions, “only the complexity and subtleties in natural language can offer meaning for these emotion categories” (2007: 31).

In hopes of decoding subtle emotion striations, several iterations of this study have attempted to apply a psychological balance structure to Subtle forms by incorporating balance theory (Heider, 1958), as affective relations tend towards a balanced state (Ortony, Clore & Collins, 1988). While balance theory was conceived as the psychological drive to balance emotion valence between three actors, the OCC posits the principle could apply to emotion between two actors and a target object, action or event creating a similar triadic relationship. When Ego has some like or dislike for Alter, it influences the emotions generated by Ego's emotional outcome to the target in relation to the emotion generated by Alter's outcome with the target, and a similar psychological desire to achieve emotional balance would exist (cf Ortony, Clore, & Collins, 1988: 98-99). The OCC's conception of emotion balance utilizes an elemental emotion structure (like/dislike) with two comparison structures of both actors to an object/event. This differs from the model offered by Thamm, where the Subtle structure is constructed from one of each structural comparisons (D), (I), (A).

Psychological balance of the attributional, distributional, and interactional comparison triad run into problems in trying to define balance between Attributional and Interactional forms. It would seem balance between those two comparisons require all four E/S categories, which Thamm terms Syndromes, and which would require comparing both actor's Power & Status attributions together, or both actor's Contributions and Retributions together to trigger psychological desire for balance. Since each of the (D), (I), and (A) structures compare different aspects of the relationship, this study will apply balance theory's format to Subtle structures using the OCC's construction of an elemental emotion category (like/dislike), plus a comparison structure from both actor's points of view. A tentative form could look like the following:



**Fig. 8.6** - Status Disadvantage Subtle Emotion Balance Diagrams -

Sources: Thamm (2004), Ortony, Clore & Collins (1990)

Only the left most Subtle form in **Fig. 8.6**, termed by this study as the Self-Evaluative subtle form, does not contain a tic mark in the Other like/dislike cell (bottom right), which makes that form independent of like or dislike of Other. Speculatively, it may be that a Self-Evaluative form ignores alter and represents an Ego-centric evaluative form in which imbalance produces some form of psychological discomfort. However, it is not clear that a psychological drive for balance without an Other like/dislike dimension would exist, and the Subtle form could simply be the composite of the three comparison relations. Instead, the elemental feeling for Other comes from the expectations for Other, either Disillusioned for not meeting or Impressed for meeting, giving the Self-Evaluative subtle form a self-conscious focus of upon Self's attributional structure.

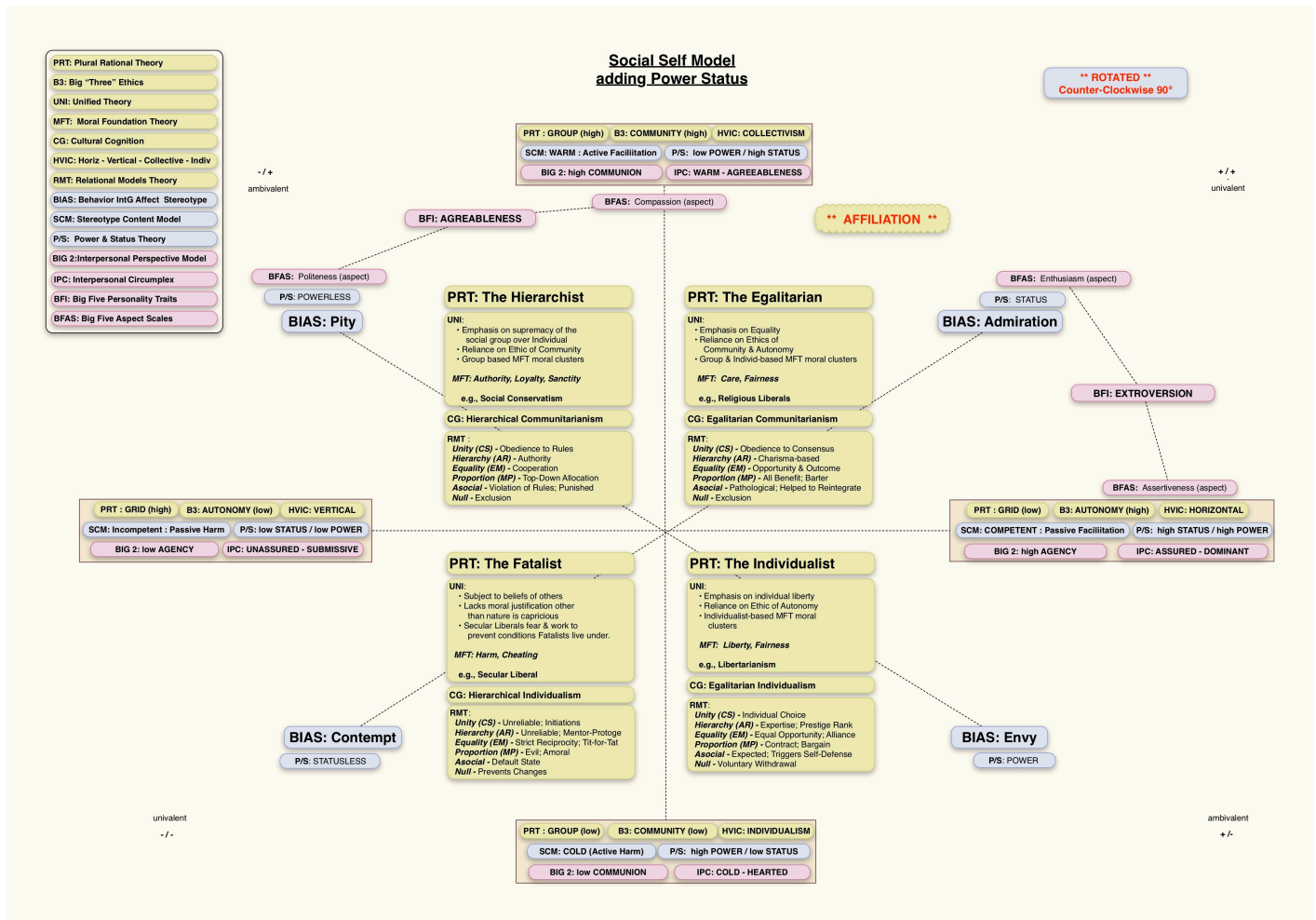
The other three Subtle forms do contain an Other like/dislike elemental structure, with each having a



different complementary Comparison structure to be balanced. The third Subtle form, termed the Other Evaluative, is an other-evaluative emotion form, producing emotion based on the distribution between them. This corresponds to the BIAS map (**Fig. 3.1**) emotions directed towards others. Liking Alter will affect the emotion type in differentials of distribution, with liking muting differences, and disliking enhancing the negative valence, or oppositely when distribution is positive, liking would produce a stronger positive valence with an even distribution or produce mixed feelings when the feeling towards alter is dislike. The like or dislike structure would influence the emotion blend increasing the intensity towards alter when the valences are univalent while muting intensity in ambivalent mixes. This may explain the mixed emotion dynamics of the BIAS map in Stereotyped perception (Cuddy et al., 2008).

For the second and fourth Subtle forms in **Fig. 8.6**, these include the like/dislike structure with an Attributional or Interactional complementary structure, respectively. A similar dynamic may occur in that similarly valenced elemental Like/Dislike and comparison emotion produce a univalent blended emotion, affecting the intensity of feeling, or muting intensity in differences in valence. However, the comparison structures are not similar to distributional comparisons, which compare the meeting of expectations (social norms). In the case of the Attributional comparison (2), it is an evaluation of Ego's Power-Status, of which Alter's evaluation is only structural. For the Interactional comparison (4), it is an assessment of Alter's retribution capacity. Both of these assessments provide important information with regards to threat from Alter, which may make the balance between emotions psychologically salient, and provide an added emotion dimension for these Subtle forms.

Thamm posits, "the formal mapping of these emotion structures and labels into a comprehensive classification system is possible...perhaps the taxonomy could resemble the periodic chart of elements, using E-S states instead of protons, neutrons and electrons" (Thamm, 2004: 220). Thamm's model for differentiating emotion categories produced according to psychologically important social structural relations provides a testable of systematically creating a hierarchy of emotion categories correlated with structural social behavior, which he likens analogously to the taxonomic structure of living things (cf Thamm, 2007). The mapping of all the combinations of Power and Status interactions could provide an empirical framework for testing universal emotion categories generated from universal social structures.



**Fig. 8.7 - Social Self Model adding Power & Status**

Much time has been spent within emotion studies across many fields, arguing over whether emotions represent distinct kinds, directly produced and mapped to specific brain structures, and/or having unique neurophysiological autonomic fingerprints. There is “much evidence and agreement” among researchers that emotions represent "autonomic-motoric-cognitive states" and that the number of recognized emotional states are constrained by the number of functional autonomic states (Kemper, 1987). Thus, emotions tie the social interactional and psychological to the physiological via the autonomic nervous system (ANS) in which Fear, Anger, Depression and Satisfaction are *primary* physiological emotion states directly tied to the most basic functional ANS states (Kemper, 1987), a view which is not necessarily shared across theories of emotion (Barrett, 2006a).

## CHAPTER NINE

### Neural Underpinnings of Emotion

*“The polyvagal theory forces us to interpret compromised social behavior from a different perspective. The theory emphasizes that the range of social behavior is limited by physiological state. The theory also emphasizes that mobilization and immobilization behaviors may be adaptive strategies to a challenged (i.e. frightened) individual. Thus, it may be possible that creating states of calmness and exercising the neural regulation of brainstem structures may potentiate positive social behavior by stimulating and exercising the neural regulation of the social engagement system.” Porges (2001: 142)*

The autonomic nervous system (ANS) is part of the peripheral nervous system (PNS), with the ANS controlling involuntary processes such as cardiovascular, renal, digestive, etc. The PNS is considered physiological separate from the central nervous system (CNS), which includes the brain and the spinal cord. The ANS features dual branches, the sympathetic nervous system (SNS) which generally prepares the body for mobilization and the parasympathetic nervous system (PNS) which generally mobilizes the body for restoration. While the central and autonomic nervous systems are involved in emotional reaction and expression, no certain theory of emotion or set of experimental results are conclusive on the degree to which emotions correspond to psychophysiological states of the body (Larsen *et al.*, 2008) or whether they even correspond to discreet physiological states at all (Barrett, 2006). Theories of emotion disagree as to just how the brain and body produce emotions, whether there are separate neural circuits that produce primary emotions, or whether there are really any primary emotions which correspond to distinct physiological states (Barrett, 2006).

While the ANS produces all prototypical bodily states associated with particular emotion states such as the innervation of the cardiovascular system that controls heart rate and breathing, as well as contractions of the gut, and the calmness of satisfaction, the specificity of autonomic states to particular emotion states has been a long unsettled issue due partly to methodological inconsistencies (Levenson, 1988). The ANS pattern of arousal is not localizable, meaning unlike the

somatic nervous system in which muscular contractions can be localized and identified easily, the arousal of various internal viscera controlled by the ANS is invisible to one experiencing the arousal, as arousal feels like it is either On, as in sympathetic arousal, or Off, as in parasympathetic soothing. However, the activation of the internal visceral state is complex, containing many different processes that can vary from one another, providing many different autonomic states which may be active during emotional experiences, and which may sometimes be interpreted differently depending on the situation (Schachter & Singer, 1962). Specificity of autonomic state and emotion requires detailed measurement of neurophysiological and endocrine controls, and while methodological testing of autonomic specificity is mixed and inconclusive (Larsen *et al.*, 2008)(Kreibig, 2010), the results can be put into better context by neurophysiological theories which provide for a better understanding of the structure of ANS functioning in relation to emotional behavioral responses to environmental stimuli and social events.

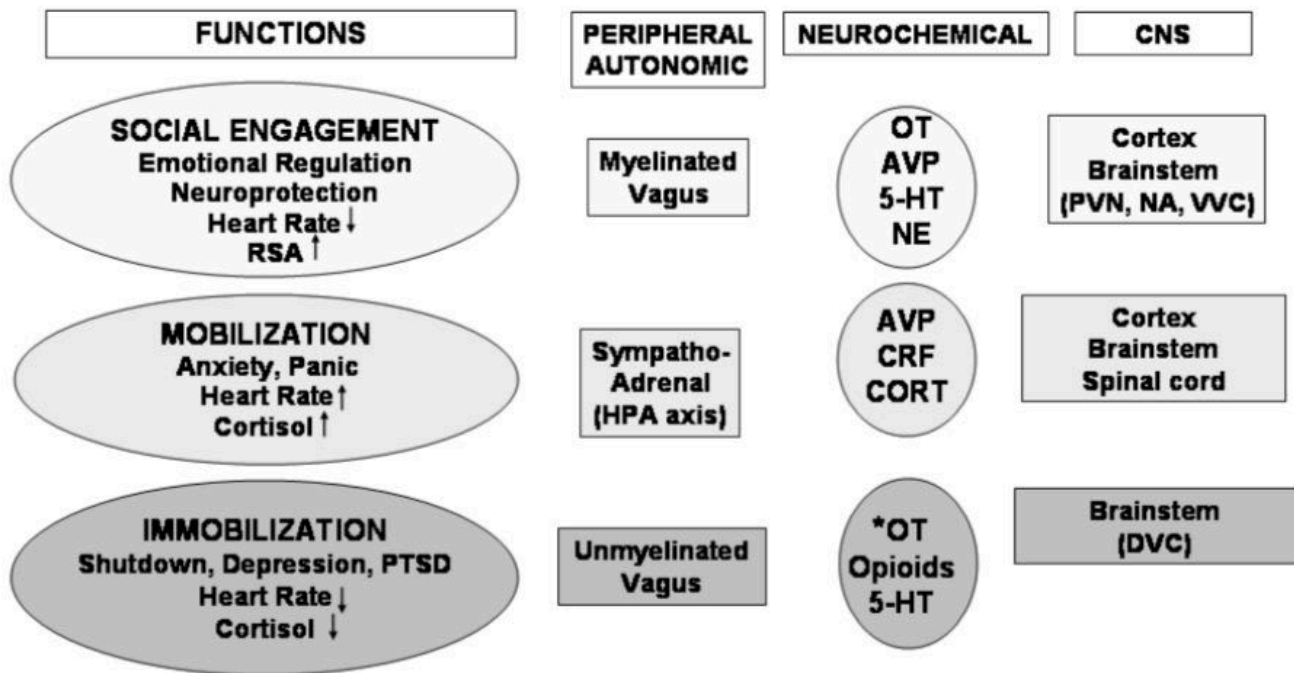
A neurophysiological framework for understanding the evolution of ANS functioning in emotion production and behavioral control is Polyvagal theory (Porges, 1995, 1997, 2001, 2003). Polyvagal Theory (PT) provides a theoretical paradigm accounting for the evolution of the neurophysiological controls to not simply manage defensive threat avoidance, typified by the fight/flight/freeze responses accompanied by negative emotions, but also to manage security and sociality through inhibition of threat defenses and accompanied by positive emotions. Polyvagal theory asserts that the evolution of the autonomic nervous system (ANS) in mammals “provides the neurophysiological substrates for the emotional experiences and affective processes that are major components of social communication,” which operates via a Social Engagement System (SES) involving both somatosensory controls of “the striatal muscles of the face, larynx, and pharynx” and visceromotor controls via “cranial nerves, especially in the regulation of cardiac function” (Porges, 1997: 838). The neurocortical controls of the SES create a neurophysiological “Social Nervous System” (Porges, 2001).

The term Polyvagal itself refers to the multiple functions of the vagal nerve, which is actually two branches of the tenth cranial nerve (the vagus), with each branch thought to have evolved to provide different adaptive behavioral strategies (Porges, 1995). The two branches of the vagus nerve serve different subsystems of the PNS: the ventral vagal complex (VVC) and the dorsal vagal complex (DVC), both of which are differentiated from the sympathetic controls for fight/flight activation

(SNS).

The Vagus Nerve is divided into two branches, a ventral (upper) part connecting the ventral vagal complex (VVC) and a dorsal (lower) part connecting the dorsal vagal complex (DVC). In humans, the ventral vagus nerve is myelinated, which is a conductive sheath surrounding the nerve and greatly speeds signal transmission from the nucleus ambiguus (NAmb) in the brainstem to the heart, while the dorsal vagus nerve is unmyelinated and carries information from the nucleus of the solitary tract (NST) to the gut (Porges, 2001). The DVC is inhibited by the innervated SNS which produces an inhibitory effect upon “the metabolically costly gastrointestinal tract” (Porges, 2001: 131).

The VVC’s myelinated ventral vagus nerve, besides connecting to the heart, also connects other organs to the brainstem and then onto higher cortical integration areas and to peripheral systems important for human social communication (Porges, 2001). Those include somatosensory systems involved in monitoring the environment (looking, listening, ingesting) and sensorimotor systems for engaging in connection (head gesture, facial expression, vocalization & intonation) (Porges, 2001). The myelinated vagus carries a constant signal down to the heart, termed the Vagal Tone, allowing the VVC to apply disinhibitory control over the heart’s pacemaker, allowing the quickening of the heart rate by decreasing of vagal tone or slowing of the heart rate through tone increase, giving it inhibitory control over the SNS (Porges, 2001). The myelinated vagus delivers cortical control over the activation/inhibition of the cardiovascular system, as well as dampening the hypothalamic–pituitary–adrenal axis (HPA) regulating neuroendocrine stress reactivity (Porges, 2001). In times of SNS activation, VVC can apply the vagal brake, increasing the vagal tone and dampening the pacemaker to quickly decelerate the heart rate, returning to a sense of calm (Schoore, 2007).



**Fig. 9.1** - Hierarchical Organization of Endocrine & Autonomic Processes -

Source: Porges & Carter (2012: 16, Fig. 2)

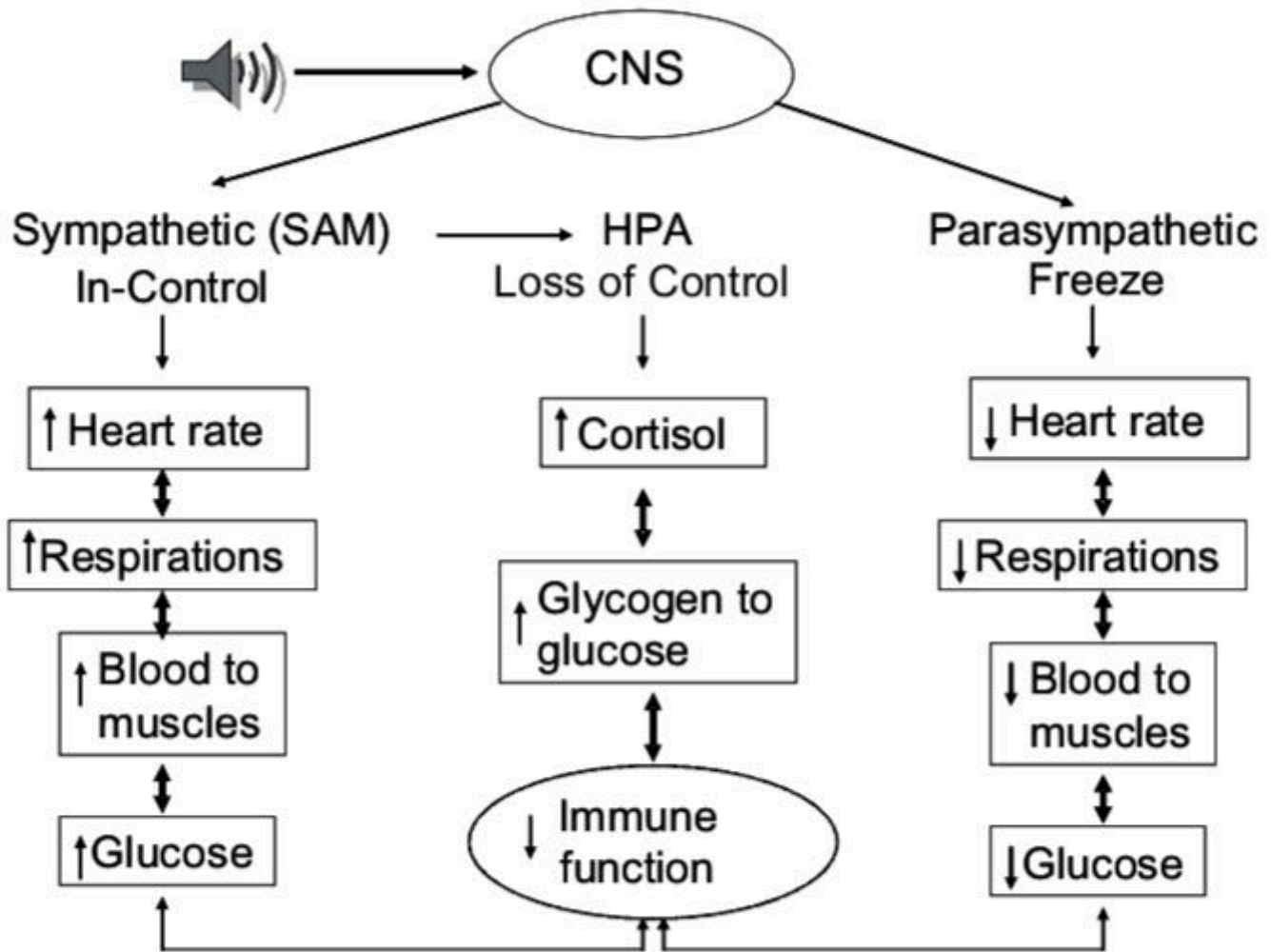
*“Each of these three neural constructs is linked with a specific emotion subsystem observable in humans. Each emotion subsystem is manifested via differentiated motor output from the central nervous system to perform specific adaptive functions: to immobilize and conserve metabolic resources (DVC), to mobilize in order to obtain metabolic resources (SNS), or to signal with minimal energy expense (VVC).” Porges (2001: 130)*

The emotion subsystems operate functionally according to a hierarchical response strategy (Porges, 1998) to deal with threatening environmental stimuli. Should the ventral vagal complex (VVC) controlling social engagement response be triggered by an environmental cue signaling threat, the next lower system, the SNS can be activated by the release of the inhibitory vagal brake, quickly sending the cardiovascular system into activation, as the myelinated signal reaches the heart quickly. If the Fight/Flight sympathetic nervous system (SNS) controlling flight/flight response (mobilization) becomes overwhelmed, the dorsal vagal complex (DVC) controlling the freeze response (immobilization) can be activated, shifting into Freeze mode, a more ancient self-protective mode (Porges, 2001). “The three levels do not function in an all-or-none fashion; rather they exhibit gradations of control determined by both visceral feedback and higher brain structures” (Porges,

1997).

Polyvagal theory posits the three subsystems (VVC, SNS, DVC) of the ANS regulating social engagement, mobilization, and immobilization generally, represent different phylogenetic stages of development that can be co-activated at different levels together, yielding a very large range of physiological states (Porges, 2001). The subsystems manifest different “adaptive functions: to immobilize and conserve metabolic resources, to mobilize in order to obtain metabolic resources, or to signal with minimal energy expense” (Porges, 1997). These match three types of emotion regulating systems: threat and self-protection focused systems; drive-seeking and acquisition focused systems; contentment, soothing, and affiliative focused systems (Gilbert, 2015).

In a theory similar to Polyvagal theory, Thayer & Lane (2000) offer a neurovisceral integration (NI) model that identifies a central autonomic network (CAN) integrating cognitive, autonomic, attention, and emotion regulation to allow the brain control of visceromotor, neuroendocrine, and behavioral responses in order to direct goal-directed behavior and adaptability to the environment. The NI model posits the CAN controls these systems by modulating sympathetic (SNS) and parasympathetic (PNS) branches to regulate cardiovascular functioning. The CAN includes a prefrontal region that has control over vagal mediated heart rate variability (HRV) via tiny fluctuations in the tonic inhibitory control of heart rate by the parasympathetic branch. In parallel, the sympathetic branch is under inhibitory control by the prefrontal cortex, preventing sympathoexcitatory activation. When confronted with threat, the prefrontal cortex areas of the CAN become hypoactive, resulting in disinhibition of sympathoexcitatory controls and triggering the fight/flight response (Thayer & Lane, 2000).



**Fig. 9.2** - The Fight, Flight, Immobilize Stress Response - *Source*: Kravits (2008: 119, Fig. 6.6)

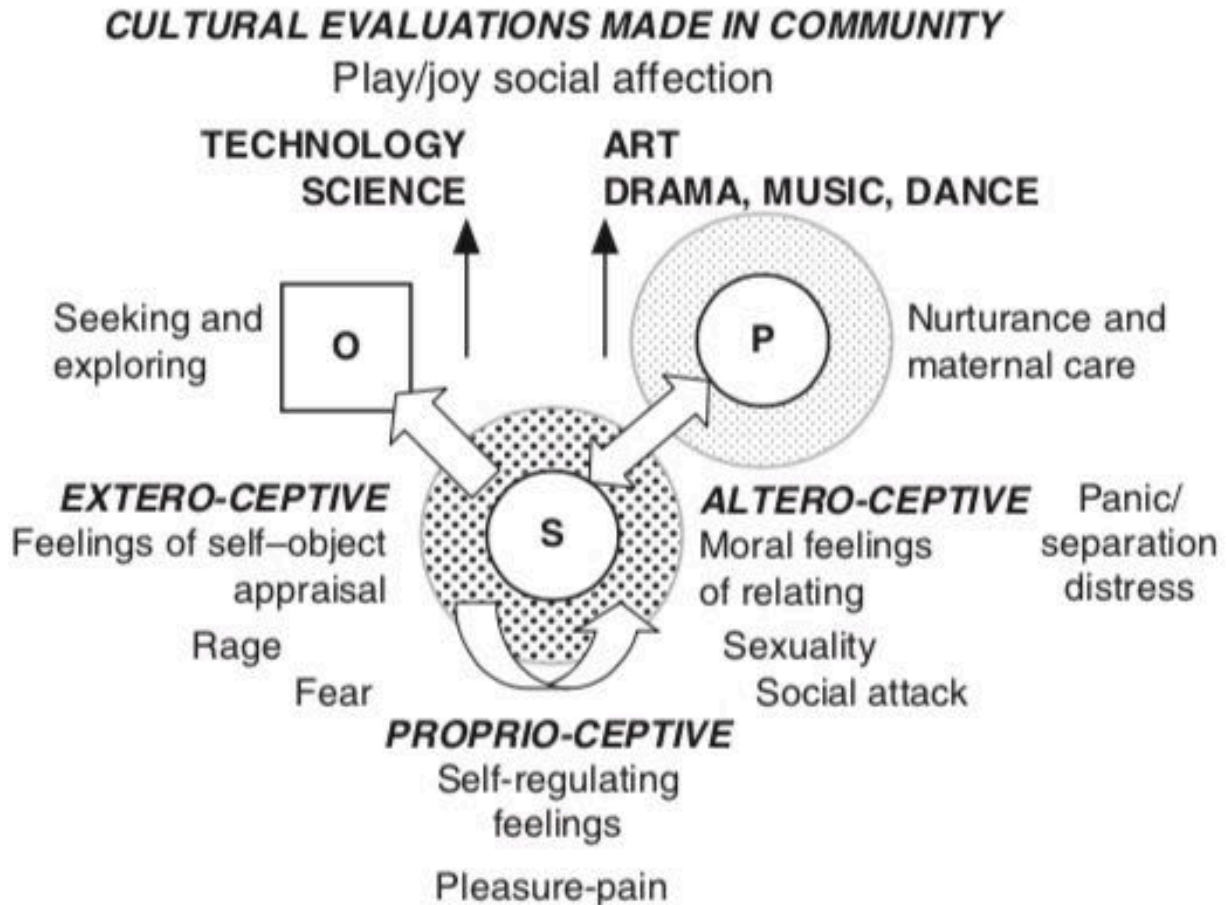
The activation of the sympathetic adrenal medulla (SAM) produces norepinephrine (NE) to stimulate the SNS, mustering resources that are functionally indicative of a striving to be in control (Kravits, 2008). Overactive or continual sympathetic activation of fight/flight leads to allostatic load (McEwen, 1998). If allostatic load becomes too great, the sympatho-adrenal HPA-axis produces cortisol, the stress hormone, to suppress the immune response and cope with stress through getting by until the stress recedes (Kravits, 2008). If allostatic load causes overload to lethal levels, the parasympathetic immobilization overrides sympathetic activation in a crisis response to stress (Kravits, 2008).

While the HPA-axis is typically characterized as the centrally affected system from allostatic load, other functional systems which are not really “separate” from the HPA-axis are also affected and altered due to the wear and tear of chronic stress (Beauchaine *et al.*, 2011). Particularly, monoamine



neural systems, which also have effects upon downstream LHPA-axis regulation, are themselves altered in their operating ranges by chronic stress (Beauchaine *et al.*, 2011). Monoamine neurotransmitters Serotonin (5-HT), dopamine (DA), and NE are involved in all aspects of affect and affect regulation, such as 5-HT effects on mood regulation or DA and NE upon defensive responses, all of which affect behavioral traits and which can result in life-long changes from exposure to chronic stress (Beauchaine *et al.*, 2011). Anxiety, Depression, and Emotion Dysregulation can result from Serotonin down regulations while dopamine down regulation has effects upon the mesocorticolimbic pathway, especially early in life (Beauchaine *et al.*, 2011), which will be shown to be central to not simply emotion regulation, but to all affective experience, which is synonymous with subjective consciousness (Solns, 2021).

Polyvagal theory omits the details of the DVC, VVC, and SNS effects on the dopaminergic pathways and their relation to 5-HT, DA, and NE neurotransmitters. The mesocorticolimbic pathways connect subcortical nuclei producing dopamine and provide the pathway for its distribution to cortical brain regions, which also loop back back to the subcortices, the precise subcortical system generating Panksepp's (1998) seven core affects of RAGE, FEAR, PANIC, SEEKING, CARE, PLAY, and LUST. The seven primary brain affects are differentiated by distinct brain systems which process different modes of affective perception. Panksepp (1998) highlights the Intrinsic Motive Formation network model (IMF, Trevarthen & Aitken, 1994) which proposes three types of perception are the source of the seven primary affects according to different combinations of the embodied self and their relationship to objects and social others in the environment. These modes of perceptions produce feelings which may compete with each other, which a higher control system must weigh and select the best strategy based on the current needs for a given situation (Panksepp, 1998).



**Fig. 9.3** - Intrinsic Motive Formation (IMF) assembly guidance system of movement -

*Source: Trevarthen & Aitken (1994: 119, Fig. 7.2)*

Trevarthen & Aitken (1994) propose an Intrinsic Motive Formation (IMF) guidance system in **Fig. 9.3**, in which proprioceptive perceptions represent subjective feelings of pleasure-pain used in self-regulation, the valence of Core Affect. Exteroceptive perceptions represent feelings which contextualize how well one is doing towards some object action/goal, creating a type of secondness which ties subjective feelings in relation to the objective action (Solms, 2021), such as producing RAGE and FEAR affects for dealing with obstacles to be overcome or avoided, respectively. Alteroceptive perceptions represent feelings produced through interaction with social others, rather than non-social objects, a type of thirdness of feelings informing how we feel about aspects of our relation to the other. The difference between these two primary external dimensions can be seen in very young infants who begin to differentiate between objects and human subjects by the second month (Trevarthen, 1979). Finally, although not specifically given a specific perception label, feelings which come from the collective “we”-ness generated by the shared experience of social interaction

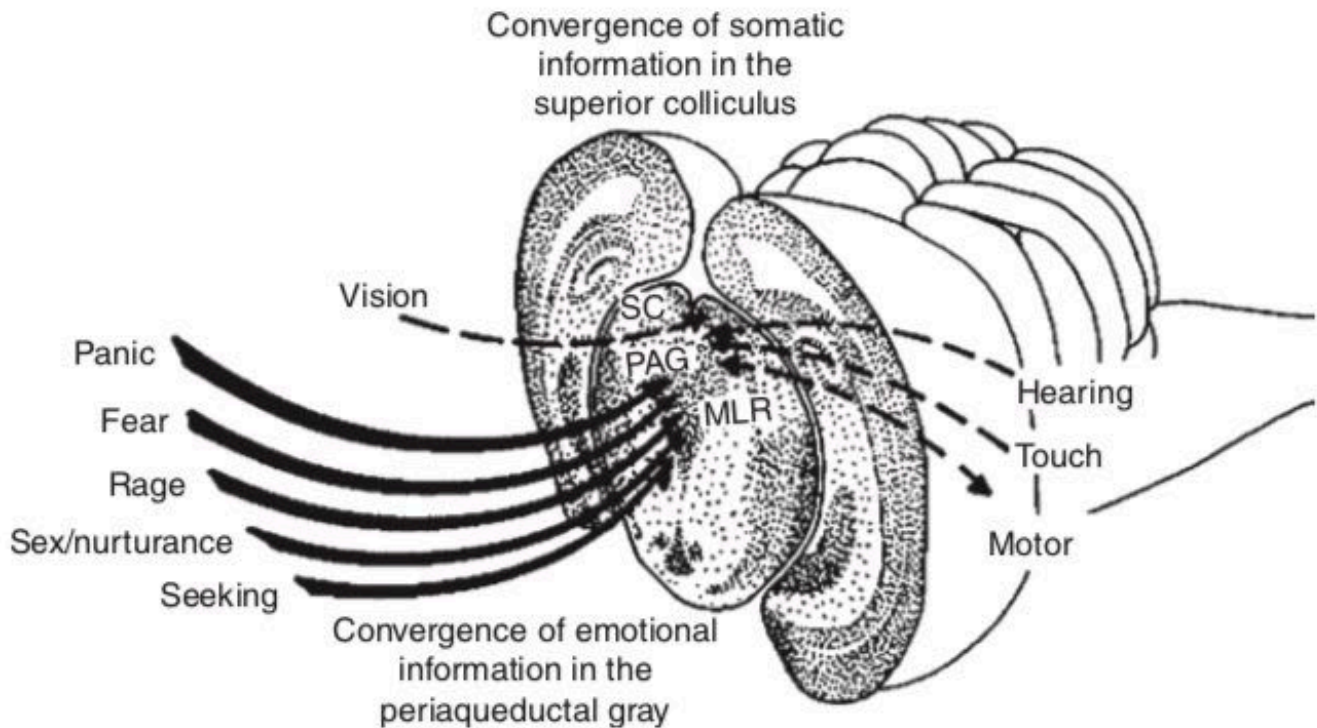
could be termed “culturo-ceptive” feelings such as play, which can be felt in dyads or even in big crowds, but which have a cultural perspective defined at the group level (many social others).

The seven primary brain affects act as “state functions of the brain” that are weighed for which is “most salient right now” (Solms, 2021). They can each be concurrently active and competing for resources, an additional dimension other than valence must exist which allows their differentiation according to context, thus they have a quality as different categorizations of affect (arousal) produced by different functional modes (Solms, 2021). Their production are largely subcortical, and it is within this subcortical system that feeling states and motivation states are combined, via subcortical “circuits.”

RAGE circuit modulates behaviors typically in response to something preventing one from meeting a current need, which initiates a drive to respond to overcome the obstacle to satisfy the need, the circuit of which is almost entirely subcortical ending in the brainstem PAG although mediated by the amygdala (AMY). The FEAR circuit motivates to avoid confrontation, pain, or danger, which initiates a drive to freeze or flee from the obstacle, which again is mediated by the amygdala (AMY). The PANIC circuit motivates feelings from separation, which is mediated by a circuit running from the anterior cingulate gyrus to the PAG. The SEEKING circuit modulates expectancy or interest/curiosity feeling that drives exploratory behavior emanating from the ventral tegmental area (VTA) of the midbrain up to the cortex known as the dopaminergic reward system. The CARE circuit motivates nurturant behaviors via a pathway situated in the dorsal preoptic area (POA) that terminates in the VTA. The PLAY circuit motivates rough-and-tumble play in young children, which has several biological functions in assisting limit testing, establishing pecking-orders, and developing empathy (Solms, 2021). The LUST circuit modulates sexual arousal that emanates via a subcortical circuit running from the hypothalamus to the brainstem periaqueductal grey (PAG).

The SEEKING circuit operates via the mesocorticolimbic pathway of the dopaminergic reward system that controls arousal. Two branches of the reward system, the mesolimbic and mesocortical pathways, start from ventral tegmental area (VTA) nuclei in midbrain containing dopamine neurons which project axons the length of the pathway. The mesolimbic pathway begins in the VTA and projects to the nucleus accumbens (NACC) of the ventral striatum modulating reward and aversion based cognition, while the mesocortical pathway projects from the VTA to the prefrontal cortex

modulating executive functions. The VTA also projects to other cortical brain regions critical in limbic emotion system, such as the amygdala and cingulate gyrus. Each of the primary affect circuits project to the periaqueductal gray (PAG) of the midbrain for output to autonomic, somatosensory, and endocrine systems to adjust behavioral response.

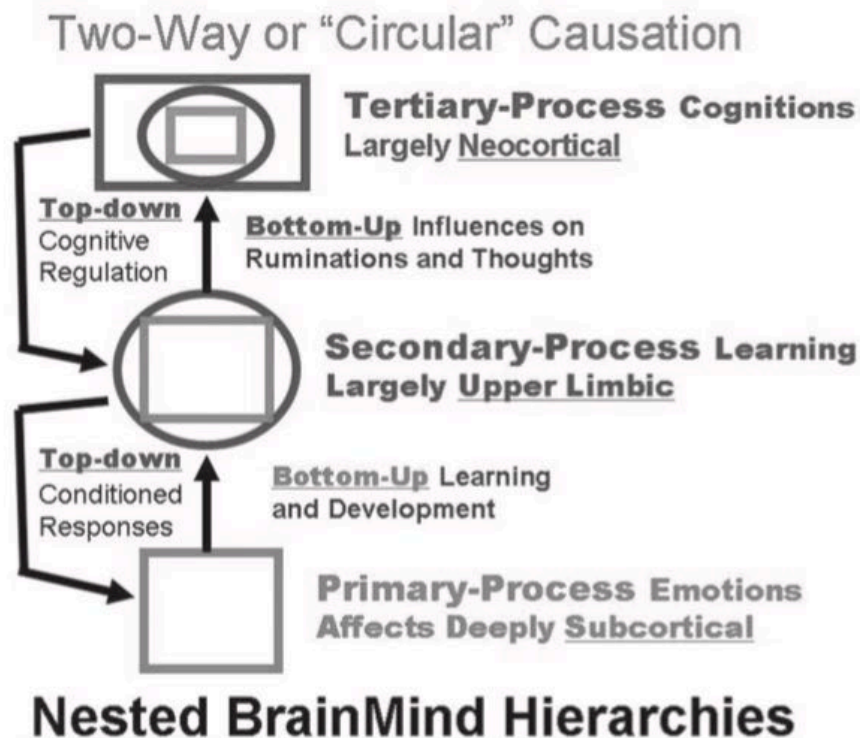


**Fig. 9.4** - Channels of Affect in the Periaqueductal Gray (PAG) - *Source: Panksepp & Trevarthen (2008: 118, Fig. 7.1)*

It is at the subcortical midbrain level that the periaqueductal gray (PAG) receives separate channels of primary affects representing input of different drives whose signals must be weighed and a proper action response output (Panksepp, 1998). Here too descending projections from cortical structures feed somatosensory channels for vision, audition, to provide “context” for the affects (Panksepp, 1998). The PAG “decides” the action option based upon its monitoring of the current “subjective need state” through selection of affect error signal which is most salient for the situation, which it does in concert with the superior colliculi (SC), to which it is reciprocally interconnected, and which is simultaneously monitoring the objective sensory and motor state of the body (Solms, 2021). Panksepp makes the case that the PAG and superior colliculus together provide “the neuroanatomical focus of the intrinsic motor SELF,” where the visceral and somatic systems are united to produce the primary process self-consciousness of affective feeling, upon which higher

cortical models of self scaffold (Panksepp, 1998: 312). The PAG and superior colliculus are also wired with the hypothalamus, the brains' relay center, as the primary hubs of intrinsic functioning.

Higher level cortical systems overlap and interconnect with subcortical systems, providing top-down and bottom-up organization of nested brain hierarchies, establishing a high level paradigm for understanding the interconnected exchange of hierarchical control systems (Panksepp *et al.*, 2010). Each hierarchical level up represents a process which reorganizes the output of the level just below, which is weighed and reorganized into a process providing greater varied responsiveness to an unpredictable environment. At the bottom of the brain mind hierarchy are Primary processes in the form of affects which guide autonomic responses to environmental stimuli, handled at the subcortical level of the midbrain, a structure conserved at least across mammals according to Panksepp (1998). The outputs of the bottom level become modified in their expression through learning (associative) and basic developmental coordination of affective response which feed into Secondary-processes involving the upper limbic structures of the inner cortex. This secondary control process provides top-down control of primary affects through conditioning ().



**Fig. 9.5** - Nested BrainMind Hierarchies - *Source: Panksepp et al. (2010: 119, Fig. 7.2)*

However, nested BrainMind hierarchies may not follow an anatomically hierarchical model with

respect to functional control. Early neurosurgery pioneers Penfield & Jasper (1954), who performed radical excisions of cortical regions to treat serious cases of epilepsy, noticed that even cortical hemispherectomy left basic consciousness uninterrupted from patients who were kept awake and lucid during surgery (Merker, 2007). Penfield & Jasper hypothesized that upper brainstem areas, were functionally integral to base level consciousness, proposing a “centrencephalic hypothesis” offering that “lower” subcortical structures may in fact be “functionally supra-cortical in the sense of occupying a superordinate position relative to the cerebral cortex in functional or control terms” (Merker, 2007: 64). Merker (2007) provides context that the Centrencephalic Hypothesis essentially posits a systems-level view of large scale brain functioning that is “anatomically sub-cortical but functionally supra-cortical,” such as when “the frontal executive can be overridden by more primitive mechanisms” (Merker, 2007: 66). This places final output of “higher” motor controls at an anatomically/cognitively “lower” level, identified as the basal ganglia constellation containing “the *substantia nigra* and ventral tegmental area, ventrolateral thalamus, superior colliculus, median raphe, and pontine reticular formation” (Merker, 2007: 66).

This subcortical constellation is not only identified in final selection of motor control output and consciousness, but also vitally involved in emotion and motivation. Although these Emotion and Motivation psychological dimensions are usually treated as separate systems and studied separately, Cromwell and colleagues (2020) provide an interdisciplinary “novel view” of the overlapping brain regions involved in the integration of emotion and motivation, one not focused upon the autonomic system, but rather, upon the core brain regions active for both emotion and motivation across the literatures of a broad range of sub disciplines in psychology, including animal, developmental, social and cultural studies (Cromwell *et al.*, 2020). They find a common theme for both emotion and motivation in the “valuation” that provides a decision variable in which to assist in “understanding and predicting dynamic properties of outcomes and motivations, such as when approach changes to avoidance” (Cromwell *et al.*, 2020: 209).

Their model uses a neuroscience paradigm (Kim, 2013) to overcome the vagueness of motivation concept by positing a clear conceptualization of the central brain regions involved in the continual process of reward-driven approach (generation), value based decision making (maintenance), and goal-directed control processing (regulation) (Kim, 2013). Motivation generation is characterized by the initiation of reward-based approach that comes from anticipation of rewards, mediated by the

dopamine pathway in which dopamine is produced in the ventral tegmental area (VTA) and flows into the nucleus accumbens (NAcc) of the striatum as well as the amygdala in the mesolimbic system. The VTA is also functionally connected and transmits dopamine to the prefrontal cortex (PFC) and anterior cingulate cortex (ACC). Both of these areas are involved in reward processing, where the striatum and NAcc “forms an association of behavior-outcome” (Kim, 2013: 3).

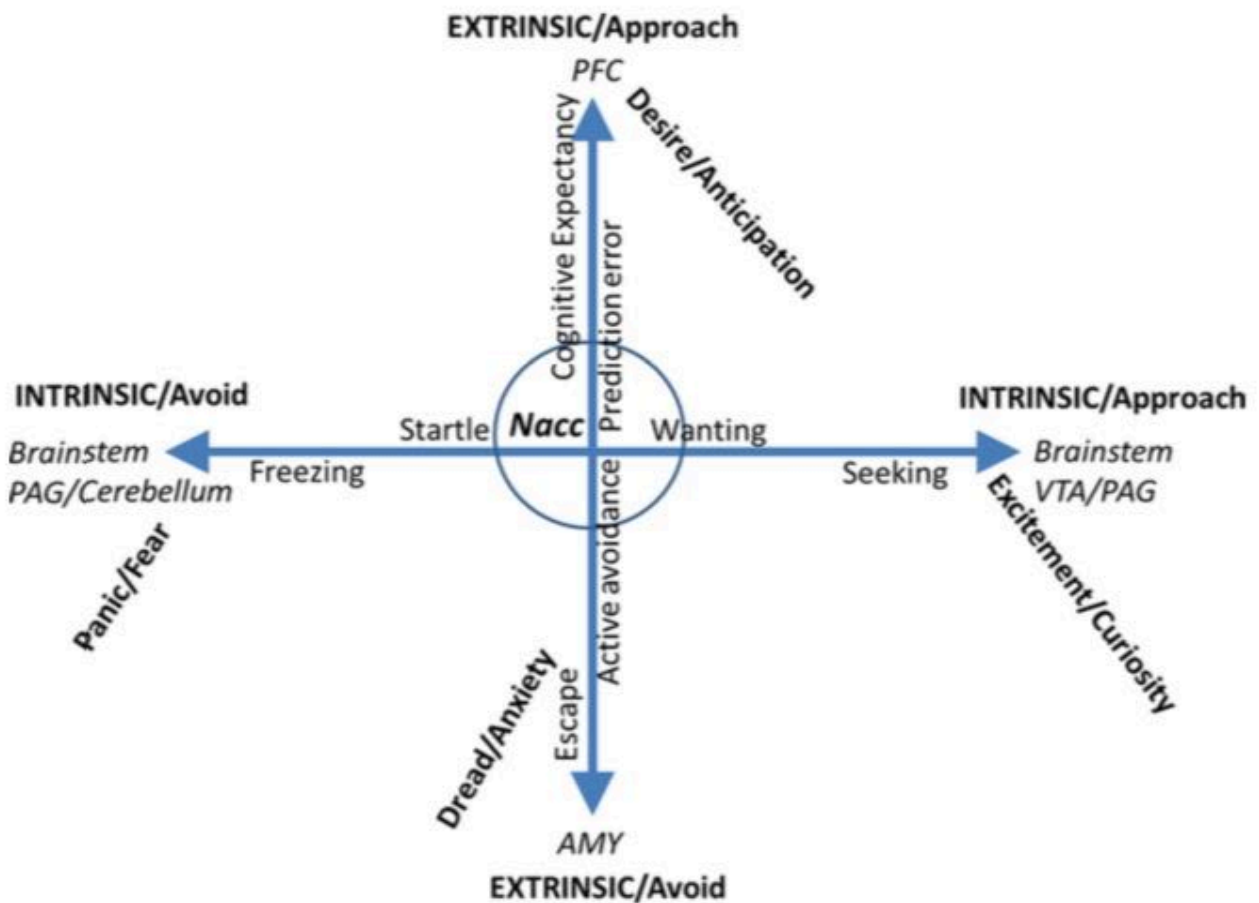
Once generated, motivation must be sustained over time during which stimuli or obstacles may distract or prevent satisfying behavioral outcomes to gain reward, requiring continual assessment and valuation that allows for decision-making to pursue the best course of action or priorities, which are “relative value of the reward and respond only to the ones with higher preference” (Kim, 2013). This is done by the executive controls, specifically the orbitofrontal Cortex (OFC), whose primary function is to integrate all relevant situational and environmental information and calculate the relative value of an expected outcome of a decision (Kim, 2013). The OFC’s decision making relies on functional connects with other frontal cortical areas, both with the dorsal-lateral prefrontal cortex (dlPFC), which “retains this information to plan actions for the reward,” and the medial prefrontal cortex (mPFC), which “evaluates the effort required to execute the plan (Wallis, 2007; Grabenhorst and Rolls, 2011)” (Kim, 2013: 4). Decisions are made and progress reassessed over time, and learning helps to build associations of behavior outcomes and rewards to enhance future motivational success.

The ability to sustain and pursue rewarding behavioral outcomes requires regulating motivation, a process involving the delay of gratification and maintaining self-control in pursuit of goal completion and not settling for “smaller immediate rewards” (Kim, 2013: 7). Cognitive control, as in consciously monitoring performance; modifying choices; and reassessing decisions; reflects the motivational regulatory mechanism involving prefrontal areas again in the OFC and dlPFC, and the dorsal ACC (Kim, 2013). The regulation of motivation runs continuously and simultaneously with the generation and decision-making processes which “interact with each other by sending prediction error signals from the striatum to the prefrontal cortex.” (Kim, 2013: 8).

This paradigm is used to describe two flavors of motivation, one that directly relates to a direct stimulus and available to consciousness, and another which instead operates via subconscious processes not available for self-report, making it difficult to study (Kim, 2013). The former is called



extrinsic motivation in that it includes processing of externalities, while the latter is intrinsic motivation in which reward or punishment is not tied to a stimulus, but intrinsic to the activity itself, such as in play or anxiety (Cromwell *et al.*, 2020). Extrinsic motivation adds a higher cognitive component that deals with stimuli from the environment, adding evaluative processing that can modify intrinsic behavior towards more adaptive responses (Cromwell *et al.*, 2020). Cromwell and colleagues propose a high level model of an intrinsic-extrinsic motivational system intertwined with emotion systems, each using the similar brain regions with a central controller to mediate action response located in the nucleus accumbens (NACC) of the ventral striatum (Cromwell *et al.*, 2020).



**Fig. 9.6** - Intrinsic-Extrinsic Motivation Dimensions & Neural Systems -

*Source: Cromwell et al. (2020: 207, Fig. 2)*

In the Intrinsic-Extrinsic model, the NACC receives inputs mediated by glutamate, dopamine and gamma amino butyric acid (GABA) neurotransmitters from the prefrontal cortex (PFC), other cortical structures in the basal ganglia, as well as from structures in the mid-brain and brainstem such as the periaquiductal gray (PAG) and ventral tegmental area (VTA), which allow the NACC to



produce “both positive and negative affective strategies involved in approach and avoidance” (Cromwell *et al.*, 2020: 210). The NACC selects a reward strategy, which produces a set of four output actions as primary motivational directions (Cromwell *et al.*, 2020). The intrinsic motivational domain produces the more ancient freeze and seeking behaviors from startle and wanting motivations, representing one strategy of avoidance or approach. The extrinsic motivational domain produces a cognitive strategy which can override the intrinsic system when alerted to salient stimuli, involving evaluating and anticipating the stimuli and intensifying responses based upon prediction error. These produce an anticipatory approach of desire or escape avoidance, which the cortex can modulate the intensity of the response and override the implicit response (Cromwell *et al.*, 2020).

The Intrinsic-Extrinsic motivation dimensions in **Fig. 9.6** focus both upon a subcortical intrinsic dimension and cortically overridable extrinsic dimension. Cromwell and colleagues implicate the NACC brain region as the functional decision point of determining incremental motivational adjustments. However, Solms (2021) points to the subcortical target structure, the PAG of **Fig. 9.4** as the structure through which each brain affect’s signal is directed as that decision point. In either case, it is the subcortical level at which supra-ordinate control of behavior is chosen.

A theory of motivation similarly at the secondary learning level of **Fig. 9.5**, the Predictive And Reactive Control Systems Theory (PARCS) (Tops *et al.*, 2010; 2014), provides a higher psychological level of analysis than the Intrinsic-Extrinsic model. PARCS models approach and avoidance in both predictive and reactive contexts, posits large scale brain systems, the Default Mode Network (DMN) and Anterior Insular (AI) that will be covered in later chapters, act to generate different states of awareness in the modulation of predictive and reactive motivational control of behavior. Approach and Avoidance are considered separable motivational processes having different control systems depending upon whether environmental or situational factors are predicted or are reactions to unpredicted stimuli (Berntson *et al.*, 1997). PARCS pairs a signature modulating neurochemical for each of the unique behavioral modes: Predictive Avoidance and Approach (noradrenergic), Predictive Withdrawal (serotonergic), Reactive Approach (dopaminergic), Reactive Avoidance (cholinergic) (Tops *et al.*, 2010).

PARCS proposes the serotonergic predictive withdrawal mode creates a relatively relaxed low arousal

which facilitates comfort and ease of social interaction by reducing aversive and appetitive reactivity, which facilitates “the type of social interactions, in which immediate reward value is traded for delayed rewards” (Tops *et al.*, 2010: 7), matching it with the VVC activation mode enabling social signaling and security. PARCS proposes a cholinergic system is related to parasympathetic avoidance which results in an immobilizing drive to avoid anxiety in “low-predictable environments or circumstances, in which threats are judged to outweigh opportunities” (Tops *et al.*, 2010: 273). The PNS reactive avoidance system is paired with a reactive approach system driven by dopaminergic neuromodulators which signal rewards (Tops *et al.*, 2010). PARCS posits the PNS driven systems to be in natural opposition to the SNS driven noradrenergic systems which modulate predicted threats.

Also via a neurotransmitter model, Lövhelm (2012) offers a hypothesis that the three main monoamine neurotransmitters of Serotonin (5-HT), Dopamine (DA), & Noradrenalin (NE) act as orthogonal vectors in a “final pathway” delivering emotional information across “large and dispersed areas of the brain” (Lövhelm, 2012: 341). Building upon the basic emotion theory of Tomkins (1962/2008) who offered a set of eight primary emotions at a basic activation level paired with a second term describing a higher level of activation of the primary term. Tomkins reviewed the correspondence of variation of high and low levels of 5-HT, DA, and NE in relation to each other that produced eight characteristic states which correlate with affective facial displays (Tomkins, 1982). The state in which each of the three are high correspond to an attentional state, of Interest/Excitement in which a characteristic facial display includes eyebrows clenched with eyes sharply tracking. The state in which all three are low corresponds to a Shame/Humiliation emotional state with a corresponding facial display of eyes and head down. Combinations of the three high or low in relation to each other correspond to the other six primary emotion states (cf Tompkins, 1982).

Lövhelm postulates the monoamine system represents the “hardwired” emotional system that produces eight characteristic emotion states directly attributable to co-varying high and low levels 5-HT, DA, and NE. These can be represented as orthogonal vectors defining a 3-dimensional emotion space, with each of the eight primary emotions occupying one of the corners of a cubic, and each neurotransmitter acting as “a different aspect of emotion” (Lövhelm, 2012: 342). Using the neurotransmitter variance data of Tomkins, Lövhelm reviews the clinical accounts of typical effects of monoamine neurotransmitter signaling states, which generally agree with Tomkins accounts of these

eight emotion states.

The basic emotions, facial expression and assumed monoamine levels.

Basic emotion <sup>a</sup>	Facial expression <sup>a</sup>	5-HT	DA	NE
Interest/excitement	Eyebrows down, eyes track, look, listen	High	High	High
Enjoyment/joy	Smile, lips widened up and out, smiling eyes (circular wrinkles)	High	High	Low
Surprise <sup>b</sup>	Eyebrows up, eyes blink	High	Low	High
Distress/anguish	Crying, arched eyebrows, mouth down, tears, rhythmic sobbing	Low	Low	High
Fear/terror	Eyes frozen open, pale, cold, sweaty, facial trembling, with hair erect	Low	High	Low
Shame/humiliation	Eyes down, head down	Low	Low	Low
Contempt/disgust	Sneer, upper lip up	High	Low	Low
Anger/rage	Frown, clenched jaw, eyes narrowed, red face	Low	High	High

Note: 5-HT = serotonin, DA = dopamine, NE = noradrenaline.

**Fig. 9.7** - Levels of 3 Main Monoamine Neurotransmitters Associated with 3-Dimensions of Affect -  
*Source: Lövheim (2012: 343, Table 2)*

However, Tomkins' account leaves out an important monoamine neurotransmitter, acetylcholine (ACh), which is the primary neurotransmitter used by the parasympathetic nervous system, and the fourth neurotransmitter in PARCS theory in addition to 5-HT, DA, and NE in **Fig. 9.7**. Kemper (1987) sociological approach to emotion included identifying a small set of primary emotions that could correlate to differentiable autonomic patterns modulated by different neurotransmitters, citing the Funkstein Hypothesis (Funkstein, 1955), in which autonomic processes that corresponded prototype emotions, Fear and Anger typified by the SNS and Depression and Satisfaction typified by the PNS, correlated with the actions of neurochemicals of Epinephrine (E) and Norepinephrine (NE) for the SNS, while the PNS was typified by acetylcholine (ACh). Kemper explains while the Schachter & Singer (1962) experiment led to the decline of the Funkstein Hypothesis, critiques of their findings included that their experimental design failed to take into account social relational factors, which when accounted for, "could be seen to instigate emotions that accommodate the differentiated autonomic patterns proposed by Funkstein" (Kemper, 1987: 273).

The overlap and confluence of Intrinsic-Extrinsic Motivation theory's neurological model with PARCS, which additionally identifies neurotransmitters involved in reactive and predictive approach and avoidance, together with Lövheim's model of emotion states can be integrated in a model which robustly describes the integration of motivation and emotion. Both of these neurological models of motivational behaviors produce a similar patterning which can be matched with Polyvagal's motivational outputs. Additionally, the emotion dynamics, from a primitive standpoint as well as neurotransmitters, hormones and responses seem to be produce a similar patterning, the result of two dichotomies producing approach and avoidance responses having both reactive and predictive

modes. The Polyvagal, Intrinsic-Extrinsic motivation, PARCS, and Funkstein Hypothesis, as well as Kemper's emotion theory each recognize a similar dichotomy producing a set of different modes corresponding to neurosystems, neurotransmitters, hormones, behaviors, motivations, or emotions. They represent Neurophysiological, Psychological, Behavioral and Sociological approaches to understanding autonomic differentiation. A comparison of the typologies produced by each align in the following graphic:

### Emotion & Motivation Theories Correspondence Matrix

Motivational Drive		
	AVOIDANCE	APPROACH
RESPONSE TYPES	<p><b>*DEPRESSION</b></p> <p>FUNKSTEIN - Acetylcholine (ACh)</p> <p>PARCS – Reactive Avoidance Cholinergic</p> <p>Intrinsic Avoidance (PAG / Cerebellum) Startle – Freezing Panic / Fear</p> <p>Dorsal Vagal Complex (DVC) Immobilization</p> <p>Defense – Freeze</p>	<p><b>*SATISFACTION</b></p> <p>FUNKSTEIN - Acetylcholine (ACh)</p> <p>PARCS – Proactive Withdrawal Serotonergic</p> <p>Extrinsic Approach (PFC) Cognitive Expectancy – Prediction Error Excitement / Curiosity</p> <p>Ventral Vagal Complex (VVC) Social Signaling</p> <p>Defense – Fawn</p>
	<p><b>*FEAR</b></p> <p>FUNKSTEIN – Epinephrine (E)</p> <p>PARCS – Proactive Avoidance Noradrenergic</p> <p>Extrinsic Avoidance (AMY) Escape – Active Avoidance Dread / Anxiety</p> <p>Sympathetic Nervous System (SNS) Mobilization – Withdrawal</p> <p>Defense – Flight</p>	<p><b>*ANGER</b></p> <p>FUNKSTEIN - Norepinephrine (NE)</p> <p>PARCS – Proactive Approach Noradrenergic</p> <p>Intrinsic Approach (VTA / PAG) Wanting – Seeking Desire / Anticipation</p> <p>Sympathetic Nervous System (SNS) Mobilization – Activation</p> <p>Defense – Fight</p>

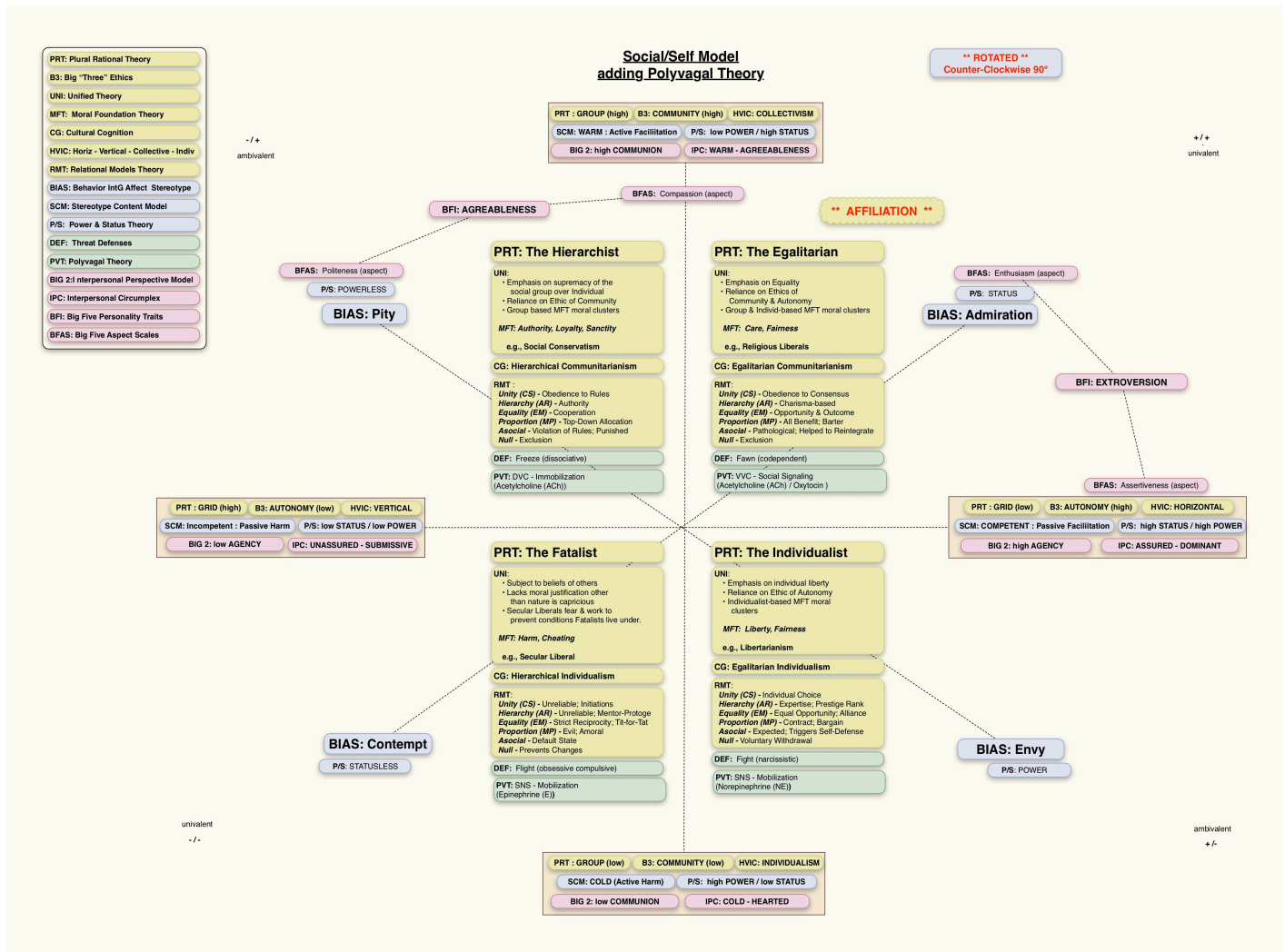
**Fig. 9.8** - Emotion Motivation Theories Response Matrix - *Sources:*  
 Kemper (1987); Tops *et al.* (2010); Cromwell *et al.* (2020); Porges (2007)

The matrix grid used in **Fig. 9.8** separates the two motivational approach and avoidance responses

in columns, which can be further broken down by their modulation by more ancient intrinsic systems or extrinsic systems using extra cognitive resources to select better strategies based upon planning and anticipation. The motivation theories in the 2-D matrix characterize the production of four responses at different levels of analysis, from hormonal, to neurological, to sociobiological, to psychological. However, the basic response logic within each cell at each of the levels produce a consistent picture of overall motivation accompanied by a characteristic primary emotion reaction. The above matrix provides a correlative approach to matching the congruence of theories across epistemic domains and may provide a resource to compare with other dichotomies producing similar typologies from other epistemic levels of analysis, the details of which will be more deeply explored later.

An interesting feature of **Fig. 9.8** is in the apparent difference in “cell” relations, as according to the Funkstein Hypothesis and Polyvagal theory, the top row cells are correlated with parasympathetic action, while the bottom row with sympathetic action. However, a diagonal dynamic also exists in the intrinsic versus extrinsic motivation dimensions. The intrinsic system involves more ancient brain regions including the brainstem, cerebellum, and periaquiductal gray (PAG), all related to basic survival mediating the essential seeking versus immobilization behavioral system resembling the most ancient regulatory system which all living things share. The extrinsic system involves higher brain regions providing a valuation capacity of environmental stimuli in order to override basic functioning, with the Amygdala marking salient stimuli and prefrontal cortex providing decision making towards higher order active avoidance or approach routines. Thus it appears these motivational dimensions emerge not from strictly parasympathetic or sympathetic actions, but perhaps in patterned PNS and SNS activity, which will be explored in more detail in the following chapters.

The patterning of Polyvagal Theory’s emotion subsystems and threat defenses can be added to the growing Social Self Model, which can be seen below.



**Fig. 9.9 - Social Self Model adding Polyvagal Subsystems & Threat Defenses**

## CHAPTER TEN

### Training the Social Engagement System

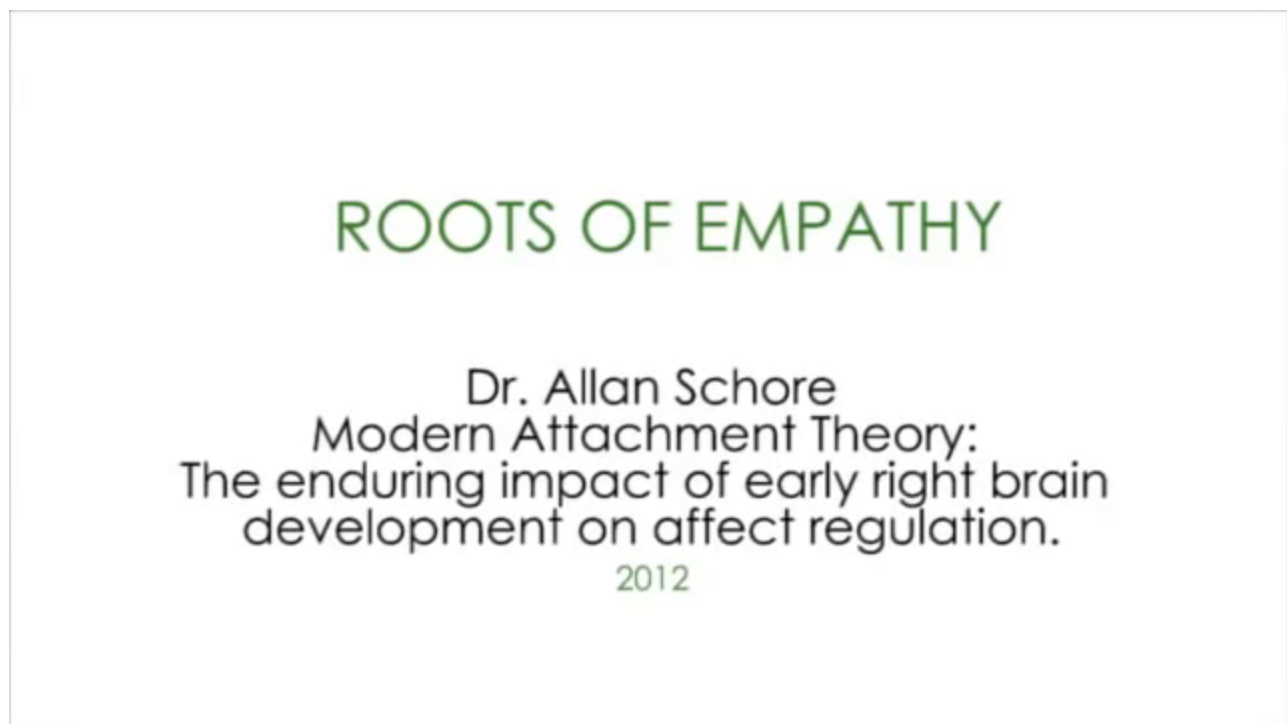
*“Affect-regulating attachment experiences specifically impact cortical and limbic–autonomic circuits of the developing right cerebral hemisphere. For the rest of the lifespan, internal working models of the attachment relationship with the primary caregiver, stored in the right brain, encode strategies of affect regulation that nonconsciously guide the individual through interpersonal contexts.” Schore (2009: 118)*

Emotion regulation is defined as the ability of individuals to influence the emotions they experience (Gross, 1998). This is to be distinguished from coping, which focuses upon decreasing negative emotions, while emotion regulation encompasses the full emotion spectrum, and these too can be distinguished from moods, which are sustained emotion (Gross, 1998). Affect regulation can be conceived of a superordinate process with lower level processes of Coping, Emotion Regulation, Moods, and threat Defenses (Gross, 1998). However, different disciplines conceive of emotion regulation in different terms, where the coupling of emotion with controllable responses varying over time differs according to physiological, psychological or social constructionist viewpoints (Gross & Barrett, 2011). There are neurophysiological realities underlying emotions for which all viewpoints must account in their model of emotion expression and control.

The VVC’s vagal control over SNS Fight/Flight can progressively calm threat defenses, although when resources are overwhelmed, such as exhaustion or over-sensitization to stress, lead to freeze and immobilization defenses of the DVC (Porges, 2003). The Social Engagement System (SES) controlling the VVC relies on the neurophysiological regulatory system of the Orbitofrontal system, can be impeded during infant development, when the OFC, VVC and other components of the system are “coming online” (Schore, 2009). The period of early infancy is a crucial time for the development of several aspects of the SES. Disruptions during this time can affect one’s social and emotional selves into adolescence and adulthood. These particularly important first years are when the child experiences the most influential socio-emotional development, during the process of infant-caregiver

attachment (Schore, 2009).

Schore states Attachment Theory (Bowlby, 1973) has shifted from a behavioral theory to an emotional theory of development (Schore, 2009). Attachment represents “the regulation of biological synchronicity *between* and *within* organisms” (Schore, 2009:117). Attachment theory posits a primary caregiver provides co-regulation of infant’s developing autonomic nervous system and social communication system through synchronized affect-laden facial signaling and bodily contact. Facial and body movements represent the first means of communication between infant and mother (Schore, 2003a). Co-regulation includes tuning of affective social communication through the process of cooing, suckling, baby talk, face-to-face mutual gazing, facial mirroring and vocalization, as well as establishing in the infant the ability to self-regulate emotion change and recover from negative emotions, providing body contact, co-generating positive feelings and creating a social bond (Schore, 2000).



**Fig. 10.1** - Dr. Allan N. Schore - Roots Of Empathy Talk <https://youtu.be/cosKY86Qmzo> -  
Source: Schore (2016)

Schore (2003) characterizes the process of attachment as the synchronization of right brain regulation between caregiver and infant. It is during this time the infant develops “the capacity to



experience, communicate, and regulate emotions” (Schore, 2003a: 72). The right-brain “acts as a unique response system preparing the organism to deal efficiently with external challenges, and so its adaptive functions mediate the stress coping mechanisms” (Schore, 2003a: 74). The right-brain is dominant during the first three years of infancy (Schore, 2003a: 74), when maturation is “experience dependent” acquired through affect-regulating transactions between the mother's right brain and the infant's right brain (Schore, 2003a: 82). Thus, the emotional regulatory system is not innately shaped, but responsive to the environment in which it grows and responds.

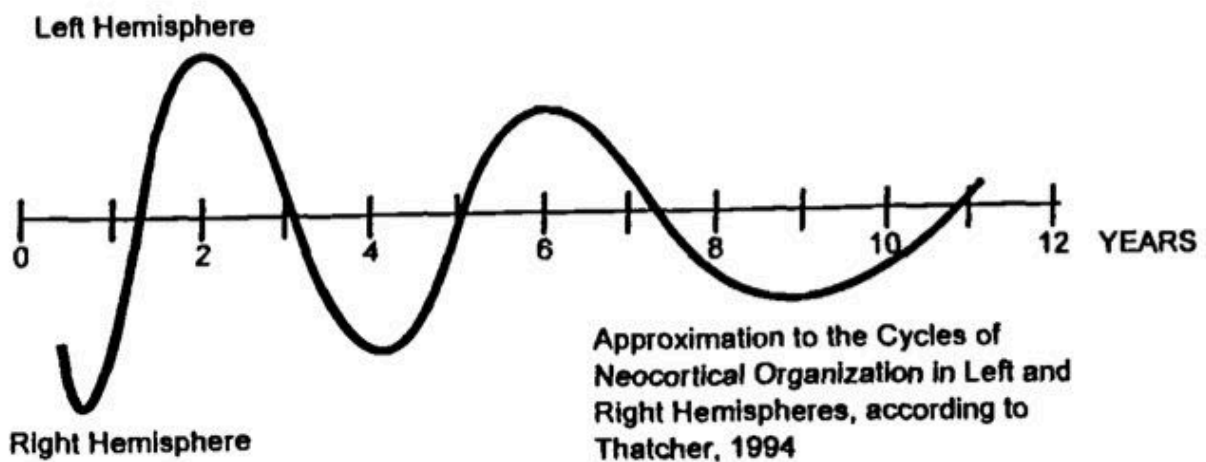


FIGURE 4.1. Hemispheric brain growth cycles continue asymmetrically throughout childhood, showing early growth spurt of the right hemisphere. (Trevathan 1996, adapted from Thatcher, 1994)

**Fig. 10.2** - Hemispheric Brain Growth Cycles - Sources: Schore (2003: 74, Fig. 4.1)

The emotion regulatory system is encoded in the right hemisphere's implicit procedural memory, serving as strategies to regulate severe stress (Schore, 2003). Difficulties during attachment produce deficits to these implicit regulation scripts, impairing individuals' abilities to regulate stress and self resiliency (Schore, 2003). That this has been found to be largely dominated by the right hemisphere is a paradigm shift in neurobiology and developmental studies for these fields have long been dominated by left brain studies of the development of speech (Schore, 2003). However, the recognition of affect in cognition and discovery of asymmetric hemispheric development cycles during the first years of life have highlighted the critical importance of right hemisphere studies.

*“The right hemisphere contains an affective-configurational representational system, one that encodes self-and-object images unique from the lexical-semantic mode of the left. It stores an internal working model of the attachment relationship that determines the individual's characteristic approach to affect regulation. In the securely attached individual, this representation encodes an expectation that homeostatic disruptions will be set right, allowing the child to self-regulate functions which previously required the caregiver's external regulation. For the rest of the life span these unconscious internal working models are used as guides for future action.” Schore (2003a: 83)*

This provides a template for emotional security and trust having important long-term consequences for the infant's future ability to self-regulate. During this time the child learns both to be in dyadic relationship and also to self-regulate alone (Keller, Yovsi, *et al.*, 2004). A stream of verbal interaction with the child “center around the inner world of intentions, wishes, feelings, thoughts, and preferences of the child,” considered to be more important than the infant's own signaling (*ibid.*). “The attachment system is readily activated until the end of the third year, when the child's capacity to cope with maternal separation ‘abruptly’ improves, due to the fact that ‘some maturational threshold is passed’” (Schore, 2000:29).

Schore's Attachment model differs from traditional Attachment Theory (Bowlby, 1973), which measured the behavior of infants during exploratory forays and reunions with caregivers, creating a typology of different categories of the attachment style of the child. Theoretically, AT posits that the caregiver serves as a secure base from which the child uses and returns for exploring objects and other people. Traditional Attachment Theory classified three different categories of behaviors, labeling when children warmly engage with strangers and well as with their caregiver upon reunion as exhibiting secure attachment. Other infant behaviors such as being scared of strangers were labeled as Ambivalent-resistant, while other behavior was labeled Anxious-avoidant when the child ignores or avoids the caregiver, while a fourth category, Disorganized/disoriented, was offered for the strange situation of a mix of non-secure behaviors.

In light of cross-cultural research, Attachment theory (Bowlby, 1973) has been critiqued as being biased towards western cultural practices and conceptions of normative child behavior, which does not signify a universality for “healthy” attachment (Rothbaum *et al.*, 2000). Critique include the

characterization of the return to secure base behavior as providing the early behavior pattern which will best lead to later social competence in adulthood (Rothbaum *et al.*, 2000). Cross-cultural research has shown that other cultures place different values upon infant autonomy and individuation, leading to differences in normative assessments of healthy infant attachment styles (Rothbaum *et al.*, 2000). However, these notions of caregiver-infant attachment are different than Schore's, whom is focused upon emotion generating face-to-face interaction, rather than on child behaviors of autonomy and reunion.

Keller (2016) critiques the mother-infant dyadic model of Attachment, characterized by face-to-face co-regulation by the mother, as a largely a western cultural phenomenon, where a much higher standard of living affords mothers the material and social resources for intense and exclusive mother-infant caregiving, which is "adaptive only in particular socioecological conditions" (Keller, 2016: 60). For the vast majority of families around the world, Attachment Theory's model for ideal maternal-infant interaction does not match real life conditions, because so many lack the material resources to devote to exclusive caregiving (Keller, 2016). The lack of universality for "attachment theory's claim of its evolutionary basis, must be seriously questioned" (Keller, 2016).

Keller (2013) points out that different attachment styles "do not represent one healthy strategy and different aberrations but different adaptive strategies in different environments responding to different adaptational challenges. Therefore, secure attachment is not "better" than insecure attachment but a different way to maximize reproductive success" (Keller, 2013: 180). Caretakers follow a culturally favored set of "beliefs about parenting and follow different parenting strategies and behavioral scripts while interacting with their infants. These parenting beliefs and strategies lead to different developmental outcomes, which have an adaptive value within the specific sociocultural context" (Keller *et al.*, 2010). In prototypical independent sociocultural contexts, distal parenting styles engaging in face-to-face synchrony and object stimulation interaction are adaptive, leading to development of a more autonomous self (Keller *et al.*, 2010). Contrarily, non-western proximal parenting styles high in body contact & stimulation, interactional warmth and alloparenting lead to earlier development of compliance and obedience, focusing development more towards hierarchy and community, favored in interdependent sociocultural contexts (Keller *et al.*, 2010).

Keller's cross-cultural work makes clear that empirical evidence shows differences in culturally

specific parenting styles produce different attachment styles, although the theory fails to account for all cultural differences (Keller, 2013). Keller asserts that no style is better than another, that they simply reflect adaptations to particular sociocultural environments. However, the Autonomous vs. Community dimensions appear to be related to distributed parenting styles, whether distal or proximal, which could be ferreted out by more cross-cultural studies of infant care, which are lacking (Keller, 2013). In most other societies, infant rearing falls to a group of people besides the mother, largely siblings and female adult relatives, who engage in allo-parenting. Differing socioeconomic factors may cause infant caregiving to be spread out across multiple people instead of a single primary maternal caregiver, lessening the predictive power of attachment theory as it pertains to the child's future attachment style (Keller, 2013). Education does however influence how much face-to-face interaction mothers have with children in non-western studies (Keller, Yovsi *et al.*, 2004).

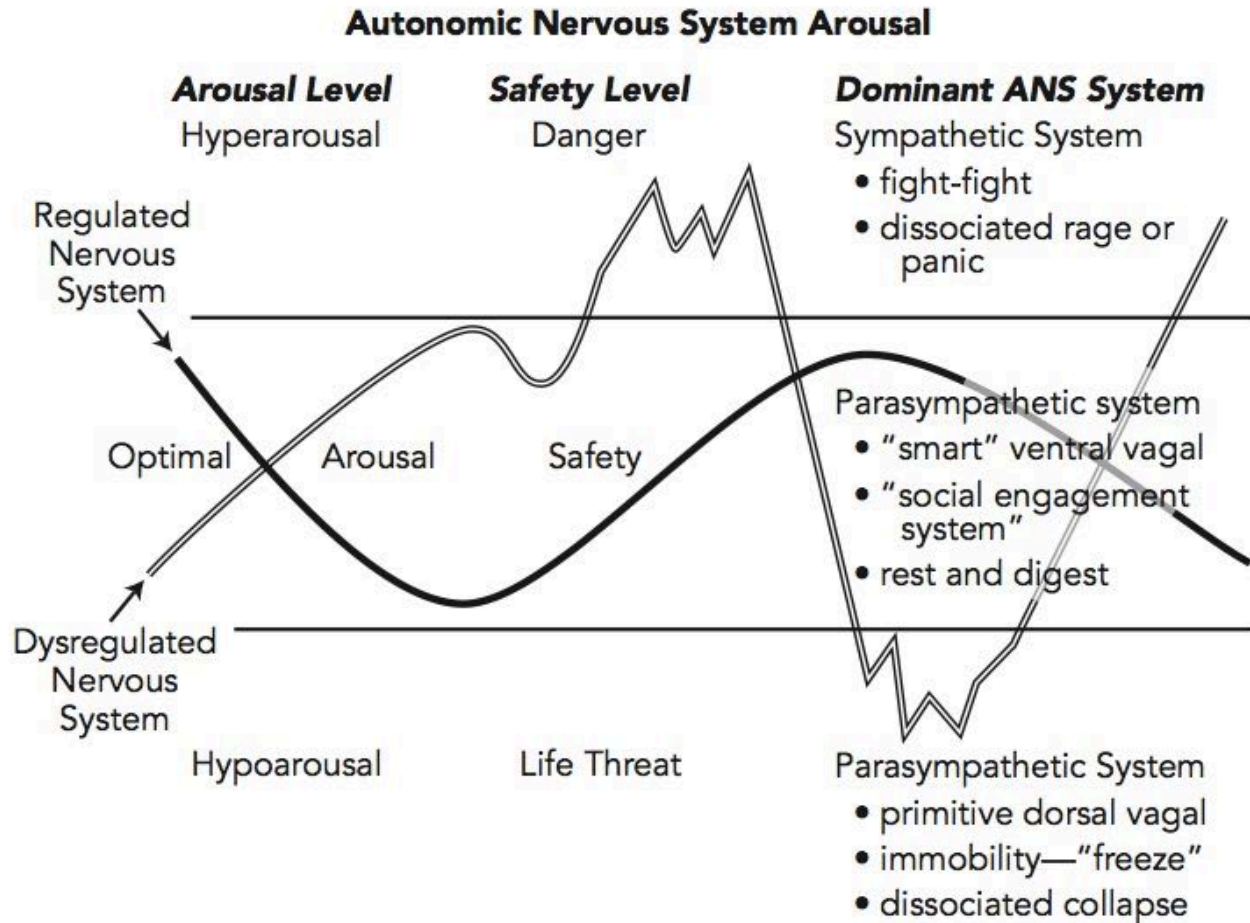
So too can economic issues contribute to the increase in risk to the attachment process. It has been shown that poverty impedes cognitive function, consuming valuable cognitive resources, leaving less for other tasks, especially maternal care (Mani *et al.*, 2013). Also, trauma experienced early in life from adverse childhood experiences (ACEs) affects the ability to regulate stress & social behavior (AAP, 2013). ACEs include emotional, physical, or sexual abuse; emotional or physical neglect; spousal violence; household substance abuse or mental illness; parental separation or divorce; and incarceration of a family member (AAP, 2013). "ACEs may become toxic when there is 'strong, frequent, or prolonged activation of the body's stress response systems in the absence of the buffering protection of a supportive, adult relationship'" (AAP, 2013). It has been estimated that a majority of people have experienced some form of childhood trauma, which gets locked into our bodies subconsciously and can affect behavior later in life (Levine, 2010). Additionally, this kind of early life stress (ELS) can lead to serious health problems in adulthood and be passed on to successive generations epigenetically (Lemche *et al.*, 2016). Epigenetic pathology include problems targeting endocrine, HPA and vagal systems affecting stress reactivity via Autonomic Imbalance and HPA Dysfunction in the Metabolic Syndrome (Lemche *et al.*, 2016).

This last point is particularly important. Epigenetic inheritance, the effect on genetic expression caused by chemicals attached to DNA via methylation or similar compounds that are able to be passed on through the germ line in pregnancy, can be caused by experiential trauma and stress that is passed on to successive generations (Hurley, 2015). The effects are pronounced for the handling of

stress, but also many other health related issues such as ADHD, diabetes, obesity, heart disease. Prolonged exposure to negative environmental situations can affect behavior into adulthood and future generations via epigenetic inheritance (AAP, 2013). Toxic social situations such as chronic poverty, homelessness, food scarcity, violence against women and children, incarceration, etc, have amplifying effects on families that are felt for years to come in succeeding generation, contributing to the endurance of chronic social problems despite many good hearted attempts at solutions.

Cross-species research reveals the key factor in negating these stressors is maternal-infant interaction (Szyf *et al.*, 2004). Studies of various mammalian species reveal maternal care of young interrupted by stressors (environmental, economic, social, behavioral), lead to varying deleterious and sometimes delayed future effects in the young. In rats, the absence of grooming and licking of young during infancy directly affect the levels of stress hormones expressed in adulthood. Converging evidence from primate and rodent studies support the hypothesis that maternal environment has a profound influence on offspring phenotype (Szyf *et al.*, 2004). These include not simply the enhancement of stress reaction, but also longer term effects, such as the timing of the onset of sexual behavior, the degrading of adult maternal behavior, enhancing defensive responses, and diminishment of social interaction (Szyf *et al.*, 2008). Particularly problematic are those effects passed on to female offspring, affecting the rearing of the next generation and forming a vicious downward cycle (Szyf *et al.*, 2008).

The “infant’s psychobiological reaction to traumatic stress is comprised of two separate response patterns: hyperarousal and dissociation” (Schoore, 120). Hyperarousal triggers the right-hemisphere fear motivational system, activating the HPA stress axis and ANS sympathetic mobilization response producing “dysregulated hypermetabolic psychobiological state of fear/ terror” (Schoore, 2009a: 120) which is “driven by the subcortical right amygdala involved in fear conditioning.” (Schoore, 2009a: 142). Dissociation involves the withdrawal from environmental stimuli, the activation of the ANS parasympathetic immobilization response via the activation of the Dorsal Vagal Complex (DVC) to “conserve energy” and “foster survival” leading to a “passive hyper metabolic state” mimicking death (Schoore, 2009:120).



**Fig. 10.3** - Autonomic Nervous System Arousal - *Source:* Schore (2009: 121, Fig. 5.1)

During infant-caregiver attachment, the caregiver helps to co-regulate the infant out of hyperarousal fear states by using soothing techniques to calm and guide the child through the negative state. However, should the fear state lead to immobilized dissociation, the trauma can be encoded in the body (Levine, 2010). Trauma endured during childhood can be embodied only to be reactivated by later events in adulthood, when an environmental trigger, say a similar state from one's own child, triggers the same dissociation in the parent, enactivating a childhood mental state with low emotional self-regulation ability and resulting in the parent losing control with an extreme negative outward reaction, such as enmeshment (Siegel & Hartzell, 2003: 161-162).

The body's ability to lock in trauma during dissociation and immobilization appears as the freezing of hyperarousal to a fast and high energy, causing a shutdown of frontal lobe executive control and overloading the homeostatic management of the ANS, triggering the DVC withdrawal (Levine, 2010). The cycle of experiencing high Arousal of such excess can lead to feelings of fear and helplessness,

producing immobilization, especially at very young ages, literally trapping the negative energetic state into an impulse towards avoiding fear and helplessness through aggressive autonomous action (Levine, 2010). Later, environmental cues may trigger a similar high arousal state which leads to adult dissociation, feelings of terror & helplessness, triggering impulsive violent aggression (Levine, 2010).

Cognitive control of the Vagal brake enables an inhibitory effect over SNS activation through deliberative PNS activation (Schore, 2007), a skill which can be progressively strengthened through practice (Hanson, 2013). The higher level cognitive controls in prefrontal areas generally are specifically identified by Polyvagal Theory to be located in the orbital-frontal regions of the prefrontal cortex. The VVC's executive controls, which are lateralized in the right hemispheric orbitofrontal cortex (rOFC), connect to subcortical areas and the limbic system to integrate information from the internal and external milieu (Schore, 2006b). The OFC functions to "integrate and assign emotional-motivational significance to cognitive impressions; the association of emotion with ideas and thoughts" and in "the processing of affect-related meanings" (Schore, 2007, p. 39). When the SNS is activated hormonally, the OFC is able to assert inhibitory regulation of arousal via the VVC control of cardiovascular innervation (Schore, 2007) by either suppressing fight/flight response by applying the vagal brake or exerting immediate cardiovascular activation by releasing the brake and lowering vagal tone. This allows the OFC to assert fine control over the limbic system via the myelinated bi-directional ventral vagal connection (Porges, 2001).

Shore (2009) offers much evidence that the senior executive controls are dominant in the right-hemisphere of the brain. The right brain is "the biological substrate of the human unconscious mind and is intimately involved in the processing of bodily based affective information associated with various motivational states" (Schore, 2009: 114) and that "the implicit self, the human unconscious mind, is located in the right brain" (Schore, 2009: 124). Schore posits the right-hemispheric emotional brain's central role in survival functions is driven by emotions, with a suite of operational controls for rapid responses to danger of avoidance and escape (Schore, 2009). The right brain is central not only in emotion processing, but also in unconscious empathic communication, responses to danger, self-image processing, regulation of autonomic function, infant-mother attachment, and affect regulation (Schore, 2003a). In fact, Schore states that "unconscious affect regulation is more essential than conscious emotion regulation in human survival functions" and that the sense of self

“depends on how well the capacity for affect regulation and affective competency has been achieved” (Schore, 2009: 116).

*“Although ventral and dorsal systems will usually work in parallel and in interaction for many tasks, stable, and dynamic biases toward one or the other system may explain temperamental and state variation, respectively, in tendencies toward reactive or proactive programs.” Tops et al. (2010: 4)*

Schore's offers that right hemispheric subcortical areas regulate emotional homeostasis and motivational processing becomes uncoupled by traumatic states of pathological dissociation (Schore, 2003a). SNS responses are oriented towards external stimuli and high energy expenditure, while PNS responses drive internal disengagement from the external stimuli and conserve energy, which when injured by trauma become dissociated and unable to co-function optimally to handle new stressors (Schore, 2009). Evidence shows that relational trauma from separation, neglect, distress, fear or rage experienced early in childhood affect development of the right hemispheric affective control system (Schore, 2009: 123). Early-onset traumatization results in disintegration of “sensorimotor experiences, reactions, and functions of the individual and his or her self-representation” (Schore 2009: 124).

The evolution of the vagal system for safety and trust was accompanied by hormonal changes that allowed for the management of feelings of security, motivation of social approach and connection, and development of pair-bonding. Oxytocin, which ancient neural systems shared with reptiles used for hormonal control over lactation and birth, was commandeered by the VVC for use in the social engagement system (Porges, 2001). Oxytocin is crucial in maternal motivation, maternal/infant care, emotional co-regulation, stress resistance, orgasm, pair bonding, and crucially, allowing for extended periods of nurture (Carter, 2014). In times of security, corresponding transmission of affect by the visceral peripheral system signals **prosocial emotions** to others, encouraging social engagement. Moreover, oxytocin operates in the DVC to immobilize the infant for bonding, suckling and other behaviors crucial for early development (Schore, 2007).

Because of the complexity of parasympathetic, sympathetic, and neuroendocrinal systems over all the different components of the internal milieu, the state(s) of the ANS is difficult to measure



(Berntson *et al.*, 1997), and meta-analyses fail to uncover physiological markers of primary emotions (Kreibig, 1990). An ANS-emotion relationship requires both establishment of emotion Coherence and Specificity (Levenson, 2010):

*“With coherence, the core issue is the extent to which the ANS response in emotion is organized and coordinated. Research in this domain has addressed two kinds of coherence: (a) coherence within the ANS (e.g., among cardiac, vascular, and electrodermal responses), and (b) coherence between the ANS and other emotion response systems (e.g., among cardio-vascular responses, facial expressions, and subjective emotional experience). With specificity, the core issue is the extent to which ANS responses differ for particular emotions.”*  
*Levenson (2010: 100)*

Coherence with respect to the ANS is measured in various aspects of the rhythmic patterns of the heart, is more than simply a pump, but serves centrally in the functioning of and communication with the cardiovascular system, the ANS, the organs and upward to the brain. The heart contains an intrinsic cardiac nervous system with intracardiac neurons which integrate efferent inputs from the brain via the vagus nerve, although the majority of the fibers in the vagus nerves are afferents which carry information from the heart to the brain (Shaffer, McCraty, & Zerr, 2014). Intrinsic cardiac afferent sensory neurons in the heart transduce mechanical and hormonal information into nerve impulses which are transmitted to the intrinsic cardiac nervous system for processing and then relayed to the central and peripheral nervous systems via vagal and spinothalamic afferents (Shaffer, McCraty, & Zerr, 2014; McCraty, 2010). This intrinsic cardiac nervous system acts as a “heart brain” that processes and encodes information, as well as modulate cortical functions via “afferent inputs on the neurons in the thalamus which globally synchronizes cortical activity” (Shaffer, McCraty, & Zerr, 2014: 5).

Several different measures of various aspects of heart functioning help to estimate Coherence, which describes the “coupling and degree of synchronization between different oscillating systems” (McCraty & Childre, 2010). While parasympathetic and sympathetic systems are notoriously difficult to measure, several different metrics of cardiac control allow for estimations of SNS and PNS activity and balance. Heart rate (HR) reflects the relative balance of sympathetic and parasympathetic systems “appropriate for the context at any given moment” (Shaffer, McCraty, &

Zerr, 2014: 2). Sympathetic cardiac control is measured by pre-ejection period (PEP), while parasympathetic cardiac control is measured by respiratory sinus arrhythmia (RSA) or high frequency heart rate variability (HF) (Berntson *et al.*, 2008). Cardiac autonomic balance (CAB) is a measure which reflects the balance between the SNS and PNS, which uses a ratio of PEP and HR, while cardiac autonomic regulation (CAR) is a measure of the regulatory capacity in terms of vagal control of HR (Berntson *et al.*, 2008).

Heart Rate Variability (HRV), the change in the time intervals between adjacent heartbeats, is an emergent property of “interdependent regulatory systems that operates on different time scales to adapt to environmental and psychological challenges” (McCraty & Schafer, 2015). HRV is controlled by the intrinsic cardiac nervous system which enables the heart to influence “perception, emotion, intuition and health” (McCraty, 2015). HRV is a measure of the parasympathetic contribution to cardiac control through vagal tone, “relevant for psychophysiological research, including self-regulation at the cognitive, emotional, social, and health levels” (Laborde, Mosley, & Thayer, 2017: 1). Vagal-mediated HRV can produce therapeutic effects of self-regulation, social interaction, self-directedness and coping styles (McCraty & Shaffer, 2015). The baseline vagal tone is associated with positive, prosocial feelings while a high tone is highly correlated with positive affect, resiliency, and social connection (Porges, 2001). Cardiac vagal control is a marker of emotion regulation (Balzarotti *et al.*, 2017).

Many recent studies have found positive correlations between higher HRV and positive health. Moreover, measurement of RSA and HRV in young children could help to identify early biomarkers of neurodevelopmental disorders like ASC, which could allow for earlier therapeutic interventions (Neuhaus *et al.*, 2014). Relatively unobtrusive wearable electrocardiography (ECG) monitors have allowed researchers to observe RSA in young autistic toddlers during joint attention activities (Billeci *et al.*, 2018). Furthermore, biomarkers of reduced RSA are not solely associated with risk, but also as “indicators of increased neurobiological sensitivity to contextual factors, both positive and negative” for autistic individuals, possibly presenting an opportunity of “enhanced receptivity to positive (e.g., support, resources) or therapeutic (e.g., intervention efforts) factors within the environment” (Neuhaus *et al.*, 2014: 735).

## CHAPTER ELEVEN

### Interoception & the Opponent Control System

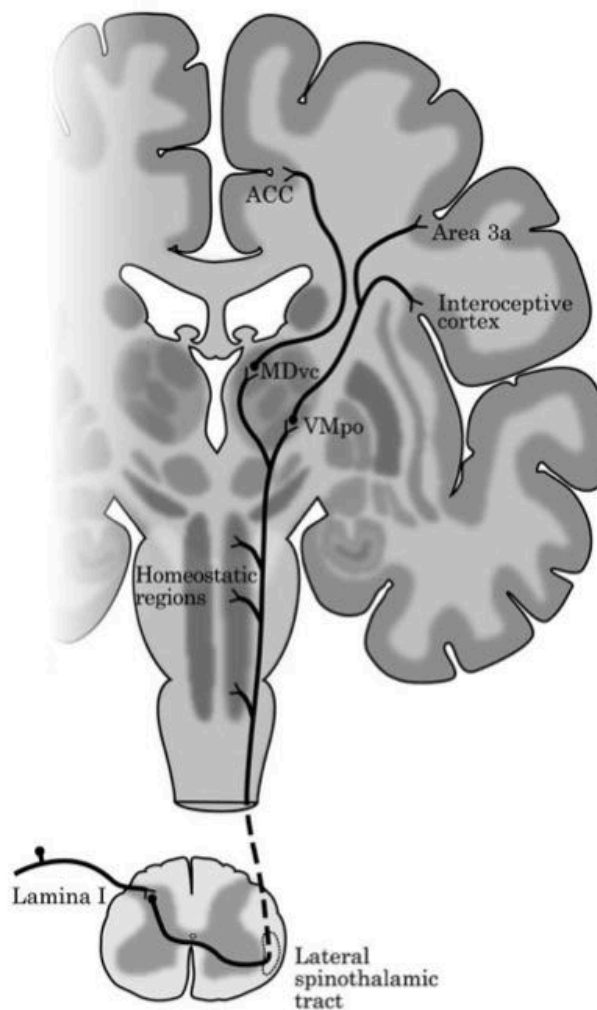
*“the limbic sensory representation of subjective “feelings” (in the anterior insula) and the limbic motor representation of volitional agency (in the anterior cingulate) together form the fundamental neuroanatomical basis for all human emotions.” Craig (2008: 272)*

While Polyvagal theory and the Ventral Vagal Complex (VVC) describe the neurophysiological underpinnings of the Social Engagement system, the VVC represents the parasympathetic afferent pathway of the ANS carrying information from the heart up to the brainstem and cortex. The information carried by the VVC represents only one of the afferent pathways of sensory information to the cortex. The other half of the ANS, the sympathetic nervous system (SNS), also has an afferent (bottom up) pathway for transmitting internal visceral sensory information to the brain, dubbed interoceptive information, which provides the brain physiological information about the state of the internal milieu of the body. This sympathetic afferent pathway answers the question, “how could ANS control so many crucial homeostatic functions without well-organized, modality-specific sensory feedback?” (Craig, 2015: 33).

Recent advances in micro electrode recording, neuroimaging resolution and careful tracing of pathways have revealed the functional organization and neuroanatomical structure which enables homeostatic regulation of the viscera, interoceptive feeling and emotional control (Craig, 2015). The recent discovery (1990’s) of this sympathetic sensory pathway and its neural circuitry represents a major conceptual shift in how sensory information is transmitted (Craig, 2015). This newly discovered afferent pathway is a low speed, small fibre “well-organized modality-specific sensory feedback pathway” for homeostatic functioning controlled by the ANS (Craig, 2015: 33) and “fundamentally distinct from the large-diameter mechanoreceptive pathway that supports discriminative touch and the sense of limb position” (Craig, 2015: 38).

The interoceptive afferent pathway carries information like pain, temperature (cool, heat, cold),

pinch, pin prick, itch, sensual touch, muscle ache, burn, toothache, cardiac pain, full bladder, and vasomotor flush (Craig, 2015). These different types of visceral sensations are transmitted via a neural network extending along the length of the spinal column, branching out to the internal viscera along the lamina I layer of the dorsal horn of the grey column (Craig, 2015). “The lamina I is the only portion of spinal grey matter that receives direct monosynaptic input from all subtypes of inner sensory fibers from all tissues and organs of the body,” including the heart, organs, bone, muscle and skin (Craig, 2015: 39).



**Fig. 11.1** - The Interoceptive Network of the Lamina I spino-thalamic pathway -

*Source: Craig (2008: 275, Fig 16.1)*

Lamina I neurons on either side of the spinal column receive input from tissues and organs on their side of the body. These neurons then project axons to connect internally within the grey column to

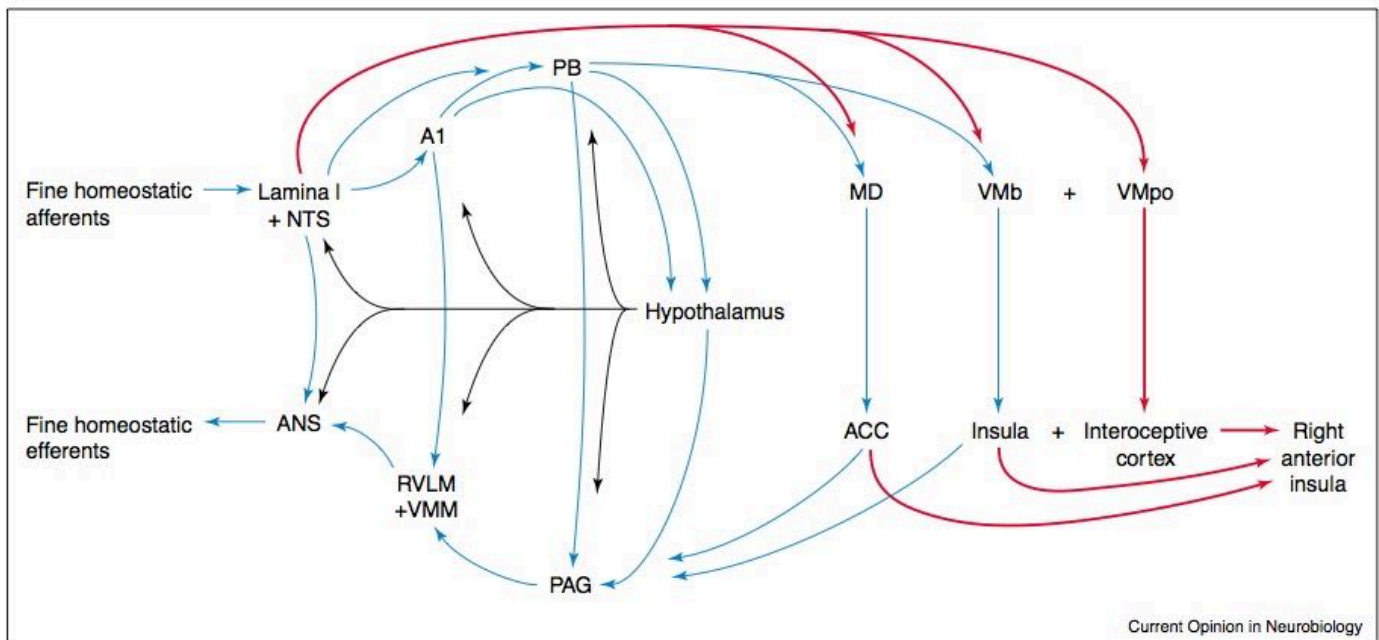
the autonomic cell column located laterally and diagonally across the opposite “hemisphere” of the grey column in the spino-thalamic tract. There, sympathetic pre-ganglionic output neurons project axons upward all the way through the spinal column to the brainstem and onward to higher cortical areas. At the Medulla, in addition to meeting with afferent information from the parasympathetic network, these axons are met and integrated with similar sensory input via the NTS from neurons in the tongue and pharynx, transmitting sensation like taste (sweet, sour, salty, bitter, umami), hunger, thirst, nausea, and “air” hunger (Craig, 2015).

In primates, spino-thalamic projections continue up through the medulla and mid-brain to the thalamus, then onto the thalamo-cortical relay nucleus (VMpo), and eventually projecting into the interoceptive cortex, the dorsal part of the posterior insular cortex. Additionally, primates also have a similar thalamo-cortical relay of afferent sensory information to the Anterior Cingulate Cortex (ACC) processing motor control. Both of these relays provide a hierarchical tier of processing above the brainstem of homeostatic sensory information unique to primates. “A parallel pathway, also unique to primates, conveys afferent input from the vagal and glossopharyngeal nerves to the adjacent thalamo-cortical relay nucleus (VMb), which in turn projects to a rostrally adjacent region of dorsal insular cortex. Together these pathways through VMpo and VMb provide a direct cortical image of all homeostatic afferent activity that mirrors the sympathetic and the parasympathetic halves of the efferent autonomic nervous system” (Craig, 2008: 278).

Thus, the parasympathetic (vagal) and sympathetic (spino-thalamic) afferent pathways are joined at the thalamo-cortical relays and mapped onto the insular cortex, located deep within the Sylvian fissure at the junction of the three major lobes of the brain. The insular cortex directly connects to the amygdala, hypothalamus, cingulate cortex and orbitofrontal cortex. It is this central part of the brain which develops first, and which in humans *most recently evolved* (Craig, 2015).

In most species, the afferent sensory information from the body is integrated at the automatic life-support homeostatic regions in the brainstem (Medulla, PAG, A1, PB), then relayed up to the motor controls directly from the brainstem. However, in primates this information is further projected and again re-represented in connections to the thalamus and onward into cortical areas. At the insula, these re-representations are topographically organized in a map of the body. Each type of feeling is represented, similar to the somatosensory map of the body, only mapping feeling and not mechano-

muscular information (Craig, 2015). However, in humans this information is yet again re-represented, in the right anterior insula (rAI), which receives input from the mid-insula and the interoceptive cortex, along with inputs from the ACC motor controls. The rAI provides an anatomical basis for the subjective experience of emotional awareness and the embodiment of emotional feelings, which “underly the James-Lange theory of emotion, the somatic marker hypothesis, and self-perception theory” (2015: 209).



**Fig. 11.2** - Primate Homeostatic Afferent System - Source: Craig (2003: 501, Fig. 1)

*“An organizational map of the homeostatic afferent system and its extension into the forebrain of primates. The afferent limb is shown in the top row and the efferent limb in the bottom row. The hierarchy consists of input-output loops at several levels, all of which are modulated by the hypothalamus (black lines) as well as the limbic sensory (insula) and limbic motor (cingulate) cortices (not shown). The red lines indicate the phylogenetically new pathways in primates that provide a direct thalamo-cortical input reflecting the physiological condition of the body. In humans, re-representations of the interoceptive cortex lead to a meta-representation of the state of the body in the right anterior insula that is associated with the subjective awareness of the ‘feeling self.’” Craig (2003: Fig. 1, pg. 501)*

The Anterior Cingulate Cortex (ACC), located far to the front of the brain and involved in the motor

control of emotion, is co-activated with the Anterior Insula (AI) during all fMRI imaging studies of emotion, with both the rAI and ACC active during conscious thought (Craig, 2015). In addition, both the AI and ACC are directly connected to interoceptive information, both receiving re-representations of this information, making them higher processing centers of emotions (Craig, 2015). The AI can be regarded as limbic sensory cortex, while the ACC can be considered the limbic motor cortex (Craig, 2015: 242). The integration of the “feeling” AI with the “behavioral agent” motivational centers (ACC, Orbitofrontal Cortices, ventral striatum) provides an “anatomical basis for the representation in awareness of the ‘I’ postulated by Damasio” (Craig, 2008: 281).

In humans, hemispheric differences create functional differences between the lateral halves of the AI + ACC circuit, processing emotional sensory and motor states across modalities with slight hemispheric differences noted throughout. The left anterior insula (lAI) aligns with parasympathetic limbic system activity, involved in energy nourishment and conservation. It is predominately involved with positive affect and calm behavior described by the term “approach-plus-parasympathetic” and linked with positive reward (Craig, 2015: 273). The right AI functions mostly with sympathetic limbic system activity involving energy expenditure, threat anticipation and vigilance. The right AI is also predominately involved with negative affect and challenging behavior, described by the term “avoid-plus-sympathetic” (Craig, 2015: 273). Balanced integration of the left and right AI-ACC controls lead to balanced and resilient emotional control (Craig, 2015).

*“The evidence indicates that this bidirectional control system integrates autonomic, homeostatic, emotional, and behavioral motor control. It functions as an opponent system with crossed regulatory inhibition, yet it provides flexible, adaptive control with coordinated coactivation.” Craig (2015: 273)*

Additionally, the AI+ACC circuit differs laterally in its connection to Von Economo Neurons (VENs), spindle-like neurons that are unique in several ways. First, VENs’ spindle-like shapes includes only a single long dendrite, providing a single fast input connection and a narrow apical axon for outbound transmission. Secondly, these unique spindle neurons are found in only several restricted areas of the brain: the anterior insula; the ACC; and the Dorsal Prefrontal Cortex, the site of planning, inhibition, abstract reasoning and high level motor control. Most interestingly, spindle neurons are found most prevalently in aged humans, and progressively less in children, cetaceans, elephants,

gorillas, chimps, bonobos and sparingly in macaques. VENs connect both the anterior insula and the ACC, which are physically located far apart, both ipsilaterally and contralaterally, thought to enable fast, complex integration of emotion and motivation (Decety & Lamm, 2009). Particularly in humans are lateral differences pronounced, with a 30-50% higher density in right hemisphere than in the left (Craig, 2015).

In humans, VENs begin growing rapidly during the first 8 months and reach an adult levels around 4 years of age, although critically they can vary in concentration across individuals. Craig posits the VENs' locations and existence in only the most highly social mammals point to VENs being critically involved in social decision-making (2015: 219). Conversely, abnormal development of spindle-neurons has been found to correlate with psychological dysfunction involving the social, where the rAI+ACC is dysfunctional in every type of mental illness (Craig, 2015). The full development of the rAI+ACC core control network and its connections to the prefrontal cortex grows more dense during development, only reaching maturity around a mean brain age of 22 years (Craig 2015: 253).

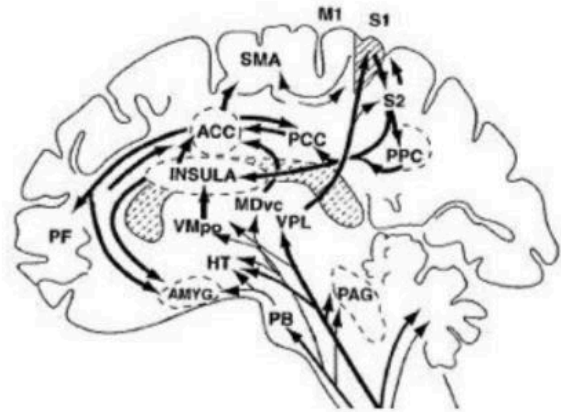
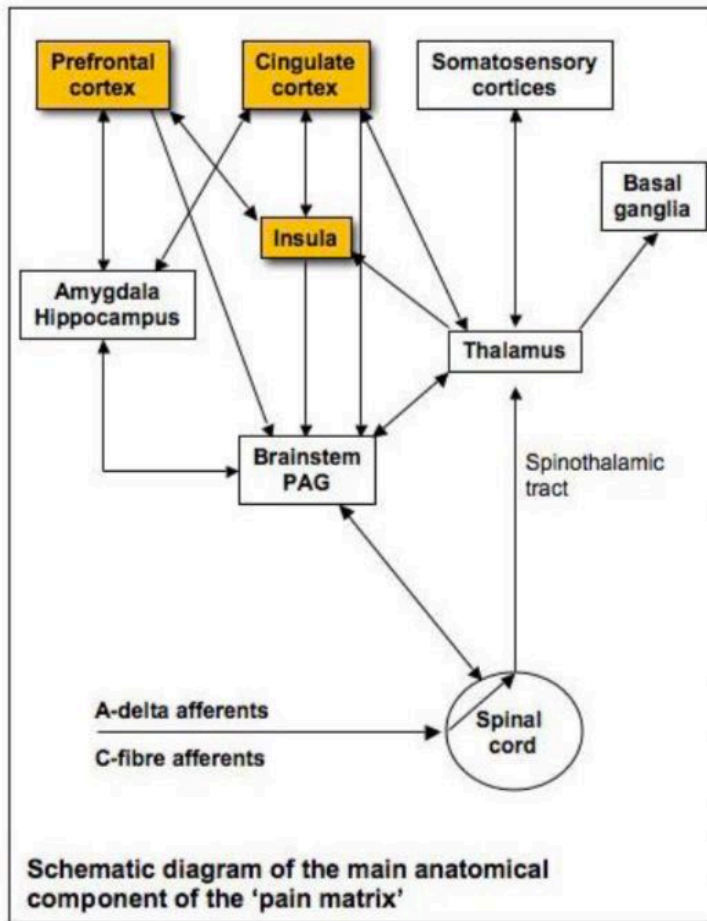
These core components of the limbic circuitry, the AI and ACC, connected by VEN's for fast, long distance coordination of emotion and motivation, have also been identified as involved in processing sensation (pain) differently when experienced versus when observed in others (Decety & Lamm, 2009). Pain perception experienced by the self and observed in others provides an exemplar for studying Empathy, which is thought to be an embodied, automatic 'mirroring' or resonance of another's autonomic state that allows for a linking of perception, affect, and action that leads to emotion relatedness (Decety & Lamm, 2009). Aspects of empathy is shared with non-human apes as well as other highly social mammals (de Waal, 1996). Human empathy then is not one thing, but a psychological construct that combines an affective "ability to share the emotional experience of the other person" with a cognitive "understanding of the other person's experience," along with a regulatory mechanism to "keep track of the origins of self- and other-feelings" (Decety & Jackson, 2004: 73).

However, the feelings of Self and the feelings for Other can be confused and undifferentiated (Decety & Jackson, 2004). The empathetic feeling from observing others and having an emotional reaction to it, when the feelings between Self and Other can be distinguished, may lead to Sympathetic concern, characterized by an Other-focused, prosocial altruistic motivation to help (Decety & Lamm,



2009). However, when empathic feelings are confused with the Self's own emotion reaction and Self and Other feelings cannot be distinguished, may lead to an aversive state of Personal Distress, characterized by a Self-focused, egoistic reaction to reduce the stressor, often in social withdrawal and a decrease in prosociality (Decety & Lamm, 2009). Interceptive deficits have been found to be caused by a condition known as Alexithymia, having high co-occurrence with autism but separable from and representing a deficit in affective empathy (Shah *et al.*, 2016). Alexithymiac individuals experience difficulties in describing and identifying emotional feelings, despite having awareness of internal bodily sensations, producing the diagnostic feature of socio-emotional deficits (Shah *et al.*, 2016).

In studies of empathic and experienced pain, the Somatosensory network is activated only in experienced pain, while the affective network is activated by the emotional content of pain perception for both experienced and empathic pain through observing another's pain, namely the anterior insula, ACC and OFC, as seen in **Fig. 11. 3** below. Observed pain in others triggers the dorsal ACC, the thalamus and the anterior insula, while the audial perception of an infant crying by breast-feeding, first-time mothers triggers those same circuits, in addition to the medial prefrontal and right orbitofrontal cortices, while the somatosensory system remains unactivated (Decety & Lamm, 2009).



➡ **The primary (S1) and secondary (SII) sensory cortices** are involved in the sensory-discriminative aspects of pain, e.g., the bodily location and intensity of the stimulus.

➡ **ACC and insula** subserve the affective-motivational component, i.e., the evaluation of subjective discomfort and response preparation in the context of painful or aversive stimuli.

**Fig. 11.3** - Somatosensory-Affective Pain Neurophysiology -

Source: Decety & Lamm (2009: 946, Fig. 48.1)

Brain imaging (fMRI) during pain perception shows hemispheric differences in the insular cortex and ACC activation during experienced and observed pain. The AI+ACC core is more left-lateralized in empathic pain, while right-lateralized in experienced pain. Observing increasing levels of pain in others triggers the bilateral anterior insula, left anterior cingulate cortex, and left inferior parietal lobe, with self-reports of empathic concern that increased with increases in observed pain levels (Decety & Lamm, 2009). A similar differential of feeling gradients are found within the insula, where observed pain showed more activation in the anterior insula, while experienced pain activated “a rostro-caudal activation gradient” that “indicate the involvement of distinct cognitive and affective processes” (Decety & Lamm, 2009: 948).

*“Analyses identified areas whose activity covaried with ACC and AI activity during self or other pain either across time (intra-individual connectivity) or across participants (inter-*

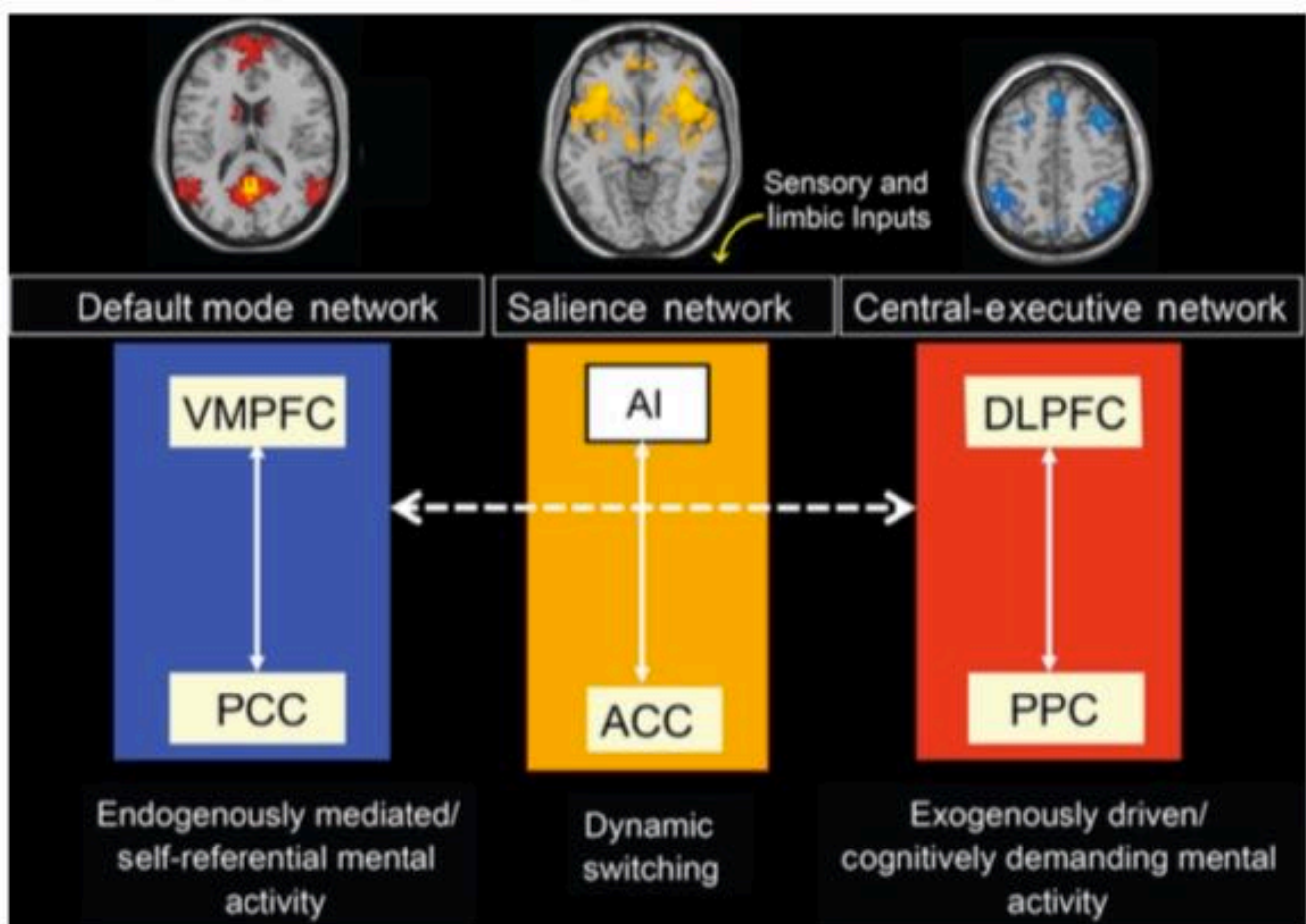
*individual connectivity). Both connectivity analyses identified clusters in the midbrain and periaqueductal gray with greater connectivity to the AI during self pain as opposed to other pain. The opposite pattern was found in the dorsal medial prefrontal cortex, which showed greater connectivity to the ACC and AI during other pain than during self pain using both types of analysis. Intra-individual connectivity analyses also revealed regions in the superior temporal sulcus, posterior cingulate, and precuneus that became more connected to ACC during other pain as compared to self pain. The results of this experiment document distinct neural networks associated with ACC and anterior insula in response to first-hand experience of pain and response to seeing other people in pain.” Decety & Lamm (2009: 947-948)*

Thus, there are neurophysiological differences in experiential versus observational perspectives. Previous studies measured only the difference in activity between first-person and third-person pain perception, but these more finely detailed analysis studied connectivity differences in experienced versus observed sensation. While the spatial resolution of fMRI brain imaging is limited and cannot be definitive, the evidence of the neurophysiological studies of experienced and observed pain points not simply “distinct but overlapping” neural networks involving the AI and ACC which process experienced versus observed pain differently (Decety & Lamm, 2009). These results support the neural encoding of emotion for both Self and Other (Decety & Lamm, 2009) in the conscious “feeling center” of the brain highly connected to the motivational controls of the ACC & OFC (Craig, 2007). However, in some subjects, there is no offset and both observed pain and experienced pain show considerable neurological overlap, which provide a neurophysiological correlate for the situation in which empathic feeling is not distinguished from self feeling and may lead to personal distress instead of sympathetic, prosocial empathic concern (Decety & Lamm, 2009).

The rAI+ACC control network is central to the Salience Network (SN), a large scale brain network involved in detecting salient sensory (external) and limbic (internal) inputs, and in selecting and monitoring behavioral response crucial in “communication, social behavior, and self- awareness through the integration of sensory, emotional, and cognitive information” (Menon, 2015: 597). The Salience Network’s rAI+ dACC core is connected to 3 key subcortical structures: the amygdala, the ventral striatum, and the substantia nigra/ventral tegmental area (VTA) (Menon, 2015). The Salience Network helps to identify what internal and external stimuli are important and towards

what to devote behavioral and energy resources (Menon, 2015).

The rAI+ACC circuit is hypothesized to be the homeostatic system evolved in mammals, and again in primates and humans, for advanced homeostatic energy regulation, essentially regulating the two salience detection systems of the SN (Craig, 2015). This homeostatic regulatory circuit in the SN provides dynamic mediation between other energy intensive large-scale brain networks: the Default Mode Network (DMN) and the Central-executive Network (CEN) (Menon, 2015), as seen below **Fig. 11.4**. The right AI, identified by Craig (2003) as generating the subjective awareness of salient “feeling” events, has been shown to be the causal component in switching between the CEN and DMN, temporarily preceding each when activating the CEN and deactivating the DMN (Menon & Uddin, 2010). The VENs are speculated to be the high speed controls from the AI+ACC controlling this switching.



**Fig. 11.4** - Salience Network Dynamic Mediation Between Networks -

*Source: Menon (2015: 605, Fig. 11)*

The Default Mode Network (DMN) is an expensive, energy consuming large-scale network centrally involved in “internally directed, interpretive, and reflective thought, for example, when remembering past experiences, imagining hypothetical or future scenarios, or deliberating on inferred, abstract, or morally relevant information” (Immordino-Yang, 2016: 4). Its component brain regions become “highly active and functionally connected when people daydream or wakefully rest in the fMRI scanner, compared with when they perform demanding cognitive tasks” (Immordino-Yang, 2016: 3). The DMN is active during moral or ethical contemplation, thinking about the future, inferring about “own or other’s psychological and moral qualities and values,” as well as when experiencing “complex emotions of others about others’ psychological qualities and inferred internal emotional experiences” (Immordino-Yang, 2016: 4). The inward focused DMN becomes deactivated when the Salience Network directs attention outward, “towards physical action and instrumental task orientation” (Immordino-Yang, 2016: 4).

That outward attending network is the large-scale Central-Executive Network (CEN), which also consumes large amounts of energy oriented towards externally driven action-execution and action perception. The CEN is centrally involved in “mediating attentional, working memory, and higher order cognitive processes” and is functionally inactive during DMN activation, and vice versa (Menon & Uddin, 2010). The Salience Network (SN) core components, the rAI + ACC, act as a switch when activated by some feeling event, directing conscious attention to from the inward focused DMN to the outward task oriented focused CEN.

Craig posits the rAI+ACC circuit evolved for homeostatic efficiency “by integrating all of the physiological information of the body with other conditions which are salient in the moment: first with all of the current conditions outside of the body, and second with all of the current conditions *represented in the brain* - the greatest consumer of energy” (Craig, 2015: 222). The integration of the rAI+ACC with the CEN and the DMN mirrors integrating the “conditions outside of the body” and “the current conditions *represented in the brain*,” producing “the active feeling state of homeostatic sentience and the feeling of being alive” (Craig, 2015: 221).

*“Signaling deficits can arise from aberrant filtering and mapping of salient stimulus cues into the SN and weak signaling mechanisms from the SN to other networks such as the*

*lateral frontoparietal central executive network. These signaling mechanisms together with poor integrity of network nodes and their anatomical connectivity (e.g., the posterior cingulate cortex and medial temporal lobe nodes of the default-mode network in Alzheimer's disease or the ventromedial prefrontal cortex in depression) can compromise interactions between these core networks. Diminished outflow from the cingulate cortex results in psychomotor poverty and impoverished goal-directed action. Weak interactions along the anterior–posterior axis of the insular cortex contribute to altered introspective awareness and physiological monitoring of the internal milieu. The consequence of abnormalities at any of these levels is deficient, context-dependent engagement and disengagement of cognitive systems important for attending to salient external stimuli or internal mental events.” Menon (2015: 608)*

Differential connection strengths of the rAI and ACC to subcomponents of the DMN or CEN result in particular deficits in externalized perception-action or internalized thought and planning (Menon, 2015). Too little signal from the dorsal ACC leads to deficits in psychomotor control and goal directed action, both CEN functions (Menon, 2015). Too little signal from the insular cortex is correlated with excessive rumination and poor autobiographical memory (Menon, 2015). Too little signal from the rAI+ACC to the dorsal lateral Prefrontal Cortex (dlPFC) and Posterior parietal cortex (PPC) in the Central Executive Network (CEN) affects working memory and sequential chaining (cf Menon, 2015: Figure 14, pg. 608).

Thus, the Salience Network core circuitry produces two overriding dynamics along a hemispherically lateralized axis and a dorsal-frontal to ventral-medial axis, which Craig characterizes as the autonomic opponent control system governed by the integration of the motor and affective systems to prepare for and act on motivation and feeling. Additionally, the DMN and CEN systems each display a neurophysiological gradient in which control over that domain's functioning varies along a continua with oppositely valenced controls.

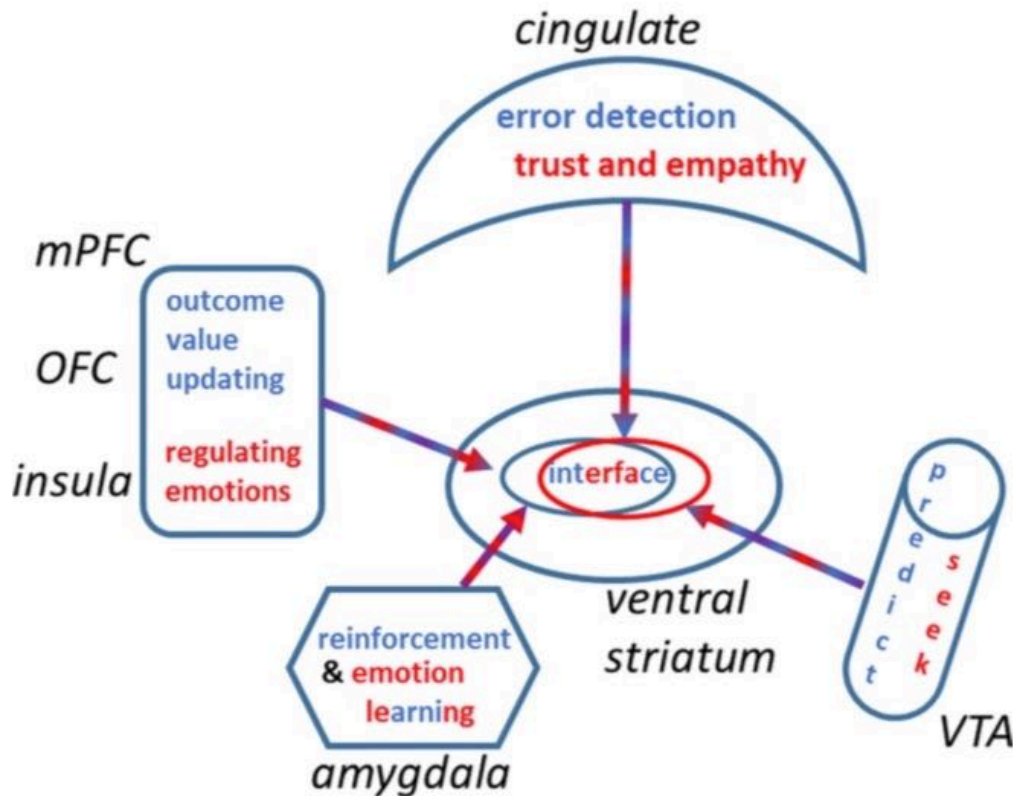
Hemispheric lateral differences appear to emerge out of the basic asymmetry between Sympathetic and Parasympathetic autonomic systems (Craig, 2015). The lateral differential in hemispheric processing of feeling is significant (Craig, 2015), providing to the basis of a logic circuit at the heart of the opponent control system described by Craig (2015). Left lateralized AI activation produces

positive affect and “approach-plus-parasympathetic” activation of the Ventral Vagal Complex, while the right lateralized AI produces negative affect and “avoid-plus-sympathetic” activation (Craig, 2015: 273), yielding a motivational action potential. However, lateralized production of univalent affect in Prefrontal cortical areas are contradicted by studies which show negatively valenced emotions, such as Anger, are characterized by left prefrontal activation, instead indicating goal-oriented approach (Harmon-Jones *et al.*, 2010).

While fMRI studies do not typically test for lateralization of functionality, EEG tests do and show alpha waves display a high degree of lateralization in the Prefrontal cortex (Grimshaw & Carmel, 2014). The source of this alpha lateralization has been traced down to differences in dorsal lateral Prefrontal Cortex functioning (dlPFC) (Grimshaw & Carmel, 2014). The dlPFC is posited to be the seat of inhibitory motivational control as measured inversely by EEG alpha power in the Central Executive Network (CEN). High left dlPFC activity inhibits negative emotion distractors, while high right hemispheric dlPFC activity inhibits positive emotion distractors (Grimshaw & Carmel, 2014). These executive controls allow the focus of attention away from emotional reactivity to maintain and achieve goal pursuit (Grimshaw & Carmel, 2014).

Activities which engage the CEN for extended periods without switching back to the DMN, including extended focus upon an activity such as in a state of flow (Csikszentmihalyi, 1990), These would be intrinsic motivations are those in which the motivation to continue some action arises from the activity itself which rely on processes involving the midbrain’s dopaminergic reward system. These occurs when the CEN is engaged with a reciprocal deactivation of the DMN (Di Domenico & Ryan, 2017).

An attempt to understand the neural correlates of combined motivation and emotion processing centers on the same neural components of the Salience Network. The intrinsic-extrinsic motivation system (Cromwell *et al.*, 2020) described earlier centers on the core set of brain regions which share different aspects of emotion and motivation processing utilizing brain regions such as the OFC, insula, cingulate, amygdala, ventral striatum and VTA, as in the figure below:



**Fig. 11.5** - Brain Regions involved in Emotions & Motivation -

Source: Cromwell *et al.* (2020: 218, Fig. 5)

“An example function is placed within each brain region for either motivation (blue) or emotion (red). Cingulate cortex has been shown to be involved in detecting errors and in social emotions. Prefrontal cortical regions have been shown to contain neural activity linked to reward valuation and express plasticity in activations when value changes. In addition the same regions have been shown to be key in regulating and mainly inhibiting emotions. The amygdala (AMY) has been shown to be a key node in connecting emotions with novel stimuli and developing reinforcement strength over time. The ventral striatum and tegmentum regions are the foundation of motivational processing with the forebrain striatal regions as a key interface area that combines input from diverse other brain regions. Ventral tegmental area has been proposed to be involved in initiating prediction error signals as well as primary affective consciousness of seeking.” Cromwell *et al.* (2020: 207)

The intrinsic-extrinsic avoidance and approach dimensions (**Fig. 9.6**) correspond to the functional modes modulated by the brain regions, among others, in **Fig. 11.5** above. The same brain regions of



the SN are active in the processing of both motivation and emotion, which may be characterized as intrinsic when the locus of motivation is rewarding or punishing in an off itself, such as in play or anxiety. However, the salience of environmental stimuli tagged by the amygdala and assessed by higher cognitive functions in the PFC provide alternative responses which can be modulated in intensity (Cromwell *et al.*, 2020). Here the ventral striatum serves as multiplexer of cognitive, motivational, and emotion functional system inputs of prediction, error detection in response strategy, evaluating previous outcomes of responses, and reinforcement of responses via learning (Cromwell *et al.*, 2020). The caption above describes the emotion responses in red and the motivation responses in blue, which are mediated by a central multiplexing ventral striatum involved in action selection.

At a higher level of analysis, the Predictive And Reactive Control Systems (PARCS) theory (Tops *et al.*, 2010) mentioned earlier with respect to its correspondence with autonomic functioning and Polyvagal Theory's three emotion subsystem's four functional modes identifies the functional brain networks as control systems which overlap in the management of self-regulation via reactive and predictive (see *reactionary & responsive*, (Huron, 2006)) modes. PARCS describes a predictive "posterior medial–dorsal cortical system" that centers around the DMN to using processes guided by internal models (of self, others, situation, social frame...ie, thoughts) (Tops *et al.*, 2014). PARCS describes the reactive control system as an "anterior temporal–ventrolateral prefrontal cortical system" centered around anterior Insula (AI) that responds to urgent stimuli in a fast, automated way (Tops *et al.*, 2014). PARCS envisions both control systems as being able to govern approach and avoidance motivations, as well as their neurophysiological functional correlates, including the action of neuroendocrine system, and their effect upon cognition (Tops *et al.*, 2014) and behavior (Tops *et al.*, 2010).

PARCS identifies a more right lateralized reactive system that equates with the Salience Network, reacting to novel stimuli in an immediate manner using a feedback system which produces highly intense affects, while the predictive system is characterized as more left lateralized Default Mode Network, processing stimuli which are familiar (already encountered from memory) over an extended time frame and effortful manner using a feedforward system which produces less intense affects (Tops *et al.*, 2014). Using conscious, deliberate reappraisals of an event to aide in regulating arousing affects, particularly negative, activates the left IFG while inhibiting the right IFG, while

naming and labeling emotions involving the left IFG also leads to decreased arousal and inhibiting the amygdala (Tops et al., 2014).

Individuals differ in the ability to exert top-down effortful control of attention over automatic bottom-up processes is dependent upon working memory capacity (WMC) (Barrett, Tugade, & Engle, 2004). WMC is utilized to activate needed goal-relevant information from long term memory, such as situational representations and action plans that may or not be subjectively available to conscious awareness (Barrett, Tugade, & Engle, 2004). Information retrieval speed and stability of representation are important differences in WMC, which lead to differences in ability to behaviorally inhibit interference of emotions or suppression effects to keep certain information out of mind (Barrett, Tugade, & Engle, 2004). Failure to inhibit automatic processes in favor of controlled processes is generally viewed as a deficit, although metrics such as reaction slowing or discrimination biases may in fact be enhanced by controlled processes (Barrett, Tugade, & Engle, 2004).

*“our consideration of WMC has led us to depart from the standard dual-process theories in two ways. First, controlled processing allows people to flexibly interface with their environment, and the source of this flexibility is the ability to control attention in a goal-directed manner, whether or not those goals are represented in conscious awareness. Thus, we have defined controlled processing not by the phenomenology of control, but by the extent to which goal-directed attention is at play. Second, our brief discussion about the dynamics of attention makes clear that goal-directed attention is often the precondition that allows more automatic forms of attention deployment to occur. The interplay between these two types of attention allocation, especially when considered at the neuroanatomical level, may obfuscate the need for the distinction between automatic and controlled processing whatsoever, thereby drastically revising the dual-process story as we now know it.”*

*Barrett, Tugade & Engle (2004: 23)*

Importantly, both the automatic and controlled processes are non-conscious, with only highly activated representations actually elevating to conscious awareness (Barrett, Tugade, & Engle, 2004). The inhibitory, effortful controls described are non-conscious, but effortful control can also be exercised consciously and deliberately, with direct correlations to the ability to consciously monitor internal salient sensations (Garfinkel et al., 2009). Interoceptive monitoring abilities can vary across

individuals, with some people able to distinguish between three dimensions that comprise Interoception: accuracy, sensibility and awareness (Garfinkel et al., 2009). Interoceptive accuracy involves the behavioral accuracy of heartbeat tracking or other measures which compare one's internal estimation of the heartbeat to an actual measure, directly corresponding to rAI activation (Craig, 2008). Interoceptive sensibility is the personal account of how people sense and are engaged with their internal milieu, which some are oriented towards while others largely unaware. Interoceptive awareness is a measure that compares accuracy and sensibility, contrasting the objective and subjective feelings of interoception into a measure of awareness. Together, these three measures provide distinctly dissociable dimensions of interoceptive ability, which in most people are dissociated, although, in a small subgroup of the population, all three measures have high correspondence (Garfinkel et al., 2009).

In all people, these measures can be disrupted and distorted by stress and anxiety (Garfinkel et al., 2009). Experiencing greater anxiety has been found to produce greater discrepancy between observed and expected body states. This has been put into theoretical terms using the "Bayesian principles of predictive processing" in which prediction error signals may arise from the difference between "representational precision and accuracy of the expected internal state of the body" (Garfinkel et al., 2009: 72). Bayesian prediction, quite generally, is associated with estimating probability based on prior probabilities. As will be covered later, the neurophysiology of anticipation seems to use Bayesian logic, which is a type of pattern recognition as a natural way of preparing the body for an expected state and reducing prediction error as part of homeostatic regulation. Importantly, greater prediction error signals represent distressed subjective feeling states (emotions) arising from the inability to accurately predict feeling state from external stimuli (behavior and events) (Garfinkel et al., 2009). This gives a clue at a neurophysiological level, how stress and anxiety may impair the ability to prepare the body for behavior in anticipation of an event.

## CHAPTER TWELVE

### Categorization, Prediction Error & Constructed Emotion

*“As an animal’s integrated physiological state changes constantly throughout the day, its immediate past determines the aspects of the sensory world that concern the animal in the present, which in turn influences what its niche will contain in the immediate future. This observation prompts an important insight: neurons do not lie dormant until stimulated by the outside world” Barrett (2017: 6)*

Neuroscientist Lisa Feldman Barrett deepens the understanding of interoception by postulating it arises from Allostasis (Sterling, 2012), the brain’s predictive metabolic regulatory process of provisioning the body with physiological resources for maintenance, growth and reproduction (Barrett, 2017). The brain does this by anticipating the body’s needs before they’re required and predictively provisions those needs via autonomic, immune and endocrine systems. The spino-thalamic pathways provides the channel transmitting sympathetic interoceptive information for fine-control of the internal viscera (Craig, 2015) which is processed by the visceromotor regions (e.g., insula, OFC, amygdala, ACC, etc). These regions are among the most densely connected hubs of the brain, connecting to the brainstem, spinal cord, and midbrain. And while these regions are typified as the emotion circuits of the brain, its their highly integrated sensory and motor processing and regulatory control that allow them to serve as multipurpose circuitry for internal cognitive simulation of the world (Barrett, 2017). A recent neuroscientific theory of emotion construction advances the understanding of not simply of emotion but of overall brain functioning, by providing a paradigm shift that may very well lead to a revolutionary rethinking of not simply emotion, but of cognition as well (Barrett, 2017).

Barrett and colleagues present a modern constructionist view of emotion embedded in modern social neuroscience, which challenges not only classical views of emotion originating from discreet circuits in the brain, but also appraisal theories positing a core set of emotion primitives having ontological existence. This new theory, first conceived of as the Conceptual Act Model (CAM) and most recently

enveloped into an ever wider take on emotion called the Theory of Constructed Emotion (TCE), is fully grounded in the latest neurological structural and functional understanding, offering a complex yet elegant rethinking of how emotion is generated. It posits that emotions should be modeled holistically, as whole brain-body phenomena in context, not as functional responses to stimuli, or as stimuli themselves, but as ad-hoc categorizations (Barsalou, 1983) of mental contents of perception and cognition.

Instead of being generated by an “anger” circuit or a “fear” module, emotions are categorizations of various mental states which are grouped together and perceived as emotions by humans as “constructions of the world, not reactions to it” (Barrett, 2017: 16). Rather than looking for specific brain circuits that situate different functional modules, Barrett and colleagues offer a theory that posits that highly connected neuronal hubs participate in multiple types of processing networks that cannot be distinguished as exclusively processing cognition, emotion or perception; nor for that matter, can particular brain circuits be said to process primary emotions like anger or fear (Barrett, 2011). Rather, the brain and its various regions all participate in highly distributed forms of processing using several primitive types which participate in the processing of all types of brain functions.

The key to understanding Barrett’s theory begins with identifying several “psychological primitives” not reducible to more basic phenomena which are engaged in all mental processes that “create mental life” (Barrett, 2011: 363). The first, Core Affect with its arousal and valence dimensions, represents the internalization of external events translated into an internal representation felt and reportable across these two component dimensions (Barrett, 2011). Affect registers not as a specific point but in a probabilistic field within the Core Affect circumplex (*Fig. 6.1*), with feelings constantly streaming and influencing the simultaneous processing of cognitive, perception and sensory events. Core Affect’s Valence and Arousal are thought to emerge from the functioning of two functional systems, the dopaminergic system producing reward and the reticular formation system producing arousal (Posner, Russell & Peterson, 2005).

*“Core affect has been characterized as the constant stream of transient alterations in an organism’s neurophysiological state that represent its immediate relation to the flow of changing events...in a sense, a neurophysiological barometer of the individual’s relation to*

*an environment at a given point in time, present at birth and homologous in all mammalian species.” Barrett (2011: 364)*

However,

*“it is often not clear whether a valence judgment (pleasant or unpleasant) concerns the appraisal of the nature of the stimulus object or event or rather the feeling induced by it. Similarly, arousal or activation ratings may refer to perceived activation in a situation (or image) or to the proprioceptive feeling of physiological arousal induced by the stimulus event.” Scherer (2005: 719)*

Core Affect, then, represents a certain type of meaning that guides behavior towards things that feel good (approach) and away from those that feel bad (avoidance). It is hardwired at birth and also homologous in mammals (Barrett, 2006b). In humans it is a pancultural human universal to communicate affect in the meaning of words for objects, actions and concepts (Barrett, 2006b), as every language communicates affective dimensions in their languages (Heise, 2010).

In addition to core affect, a second psychological primitive is the ability to categorize or conceptualize the stream of external and internal information of the current situation into concepts, guided by feeling from core affect, and relating it to previous experiential knowledge (Barrett, 2011). The categorization process can be characterized as a moment by moment ongoing process of the brain’s prediction system for preparing the body for the current and upcoming situation (Barrett, 2011). Social perception can be thought of as categorization, with all the bits of information from a social situation being associated knowledge from stored memory as concepts. The process of categorization happens effortlessly and automatically, and is “necessary for every mental state that is not pure sensation...If you are awake, you are categorizing” (Barrett, 2013: 383).

Barrett defines emotions as constructed categories which no member may even share a common trait (like a distinct neural fingerprint), but rather, be defined loosely according to relatedness to situated prototypes. These emotion categories are conceptualized at the psychological level from experience, with language playing a large part in shaping the categorization of emotion. The Conceptual Act Model (CAM) (Barrett, 2011) conceives of concepts in a very precise and defined way: they are

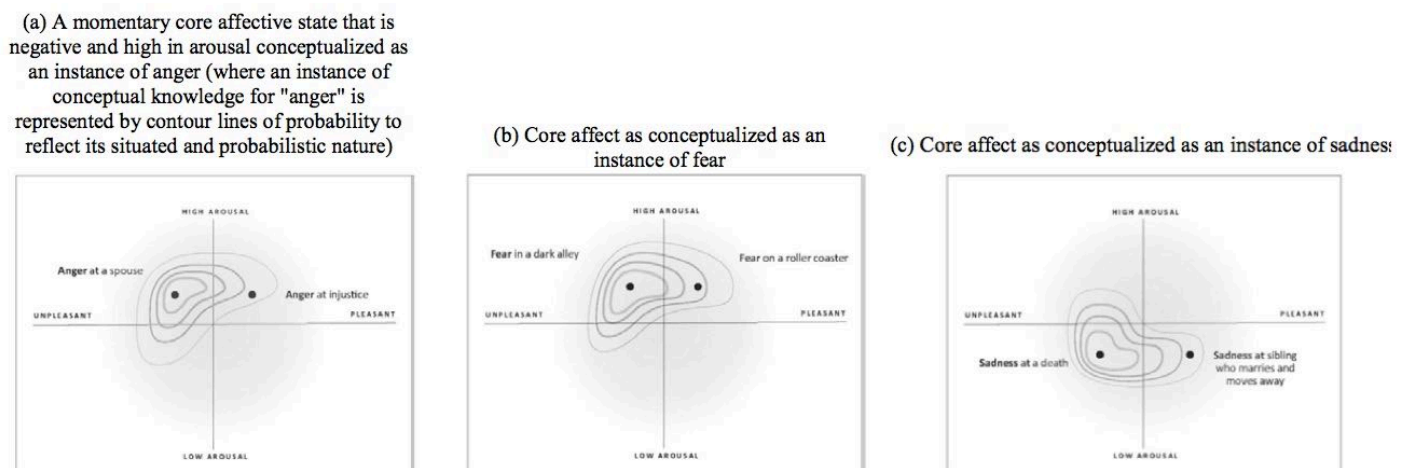
considered to be the building blocks of categorized information, combining many different experienced examples of categories across repeated situations into aggregates having a particular structure.

*“Once concepts become established in memory, they play central roles throughout cognition, supporting perception, categorization, inference, and many other processes. As people experience a situation, they categorize the agents, objects, setting, behaviors, events, properties, relations, bodily states, mental states, and so forth that are present. As some aspect of experience is perceived, it projects onto all concepts in parallel, with concepts competing to categorize the aspect, with the best-fitting concept winning. Once an entity has been categorized, categorical inferences follow, including inferences about how the entity is likely to behave, how one can best interact with the entity, the likely value to be obtained from interacting with the entity, and so forth. Such inferences result from accessing category knowledge associated with the concept used to categorize the current instance, and then generalizing this knowledge to the instance.”* Wilson-Mendenhall et al. (2001: 1106)

The Conceptual Act Model names the overall concept the Situated Conceptualization (Barsalou, 2015), defined as the representation of a concept that includes all the many components of a situation including a setting, actors, actions, objects, behaviors, events and internal states. The situated conceptualization seems equivalent to Goffman’s (1975) Social Frame, although Barrett does not make this distinction. The subcomponents of the Situated Conceptualization are themselves concepts associated with knowledge stored in memory. The construction of the situated conceptualization instantiates an object, allowing for inferences to be made about any of the information within the conceptualization. Simulation is the term used to define the process of locating the situated conceptualization in the collection of past situated conceptualizations, which iterates through matching components of the conceptualization to find a best fit to the current instance with past situated experiences. It is analogous to using knowledge from previously learned material to guide decision making, only it is an automated subconscious process to ready the body for the next instance, predictively (Barrett, 2011).

According to the Conceptual Act Model, the current feeling in Core Affective space having some combination of valence and arousal, becomes associated with the situated conceptual instance,

recognizable as an emotional feeling, highlighting and giving meaning to some aspect of experience. Categorization uses our shared semantic knowledge to categorize similar feeling states together as the same kind of emotion, where the emotion label serves as a loose ad-hoc categorization (Barsalou, 1983) of a set of situated conceptualizations. Barrett characterizes these kinds of emotions not as natural kinds with specific body state signatures originating from dedicated neural mechanisms, but as nominal kinds created by humans constraining perception of emotion (Barrett *et al.*, 2007). The labeling of emotion states and the sharing of internal experience via emotion labels produces “emotions that are not static entities, but rather context-sensitive emergent phenomena” (Barrett, 2011: 374). Emotions categories, then, emerge as loosely organized concepts that “refer to entire situations, and thereby represent settings, agents, objects, actions, events, interceptions, and mentalizing...relational structures that integrate multiple parts of experienced situation” (Wilson-Mendenhall *et al.*, 2011: 1107). These are the “dialogic cognitive representations” identified by Tomasello *et al.* (2005) that allow for shared intentionality, for we share these interpretations of situations through language and shared experiences.



**Fig. 12.1** - Depicting the Conceptualization of Core Affect - Source: Barrett (2011: 365, Fig. 2)

*“when encoding a category instance of emotion, say anger for example, we hypothesize that the brain captures the elements of the setting in which the anger occurs (i.e., other agents and objects), internal sensory (i.e., somatovisceral) cues from the body, as well as actions, instructions from others (in the form of rules), and words (e.g., the phonological form for ‘anger’ or ‘angry’). Over time, these situated conceptualizations create a heterogeneous population of information that is available to represent new instances of the category ‘anger.’ Later, when the brain requires conceptual knowledge to construct an instance of*



*emotion, it samples from the populations of situated conceptualizations, associated with relevant concepts, to create a novel situated conceptualization, which integrates current sensory input and retrieved conceptual knowledge.” Barrett (2013: 381)*

The CAM conceptualizes emotions as fluctuating instances of attempts to make meaning of feeling states using the context of situated events. There are no set of characteristics that define an emotion from a physical perspective, since the body and face can show very different expressions for emotions classified as the same type (Barrett, 2013). For example, the emotion of “anger” may include a variety of different facial expressions, as one may laugh, cry or exhibit the classical angry face depending on the context. This contradicts classical emotion theories which posit primary emotions have core neurophysiological signatures, such as Ekman’s work on facial emotional expression (Barrett, 2013). Ekman’s emotion work on facial cues claims to show a core set of emotions are universally identifiable across all cultures (Ekman, 2003). However, according to Barrett, Ekman’s methodology and its use of emotion words to be matched to actors’ portrayals of facial emotions only showed the priming effects of language and its ability to shape perception of categories, while the same experiment run without emotion words show very different results and no universality (Barrett, 2013). This hypothesis will be challenged later by this study in which a common ground can be found between the two theories.

In addition to Core Affect and Categorization, several other “psychological primitives” are involved in this process. The CAM also identifies a Controlled Attention mechanism as another primitive which “resolves conflict between competing representations or inhibiting pre-potent responses when necessary” (Barrett, 2011: 367). It is related to the executive functions which discriminate between exteroceptive features of the situation while managing attention on interoceptive feelings. In effect, the attention mechanism keeps an ever watchful eye on each of the core systems and creates an emotion when it predicts a change in core affect is causally related to surrounding events. Language processes are another psychological primitive, which CAM identifies as crucially involved in the labeling of emotion categories, as emotion categories semantically provide a top-down context for perception of emotion, as perception is a form of nominal categorization (Barrett, 2011). However, this latter hypothesis extended to assertions that emotions cannot be culturally universal or discrete will be challenged later by this study, as will the assertion that emotion categories cannot “be elevated to a common ethological framework for comparing humans with other animals” (Barrett, 2017: 16).

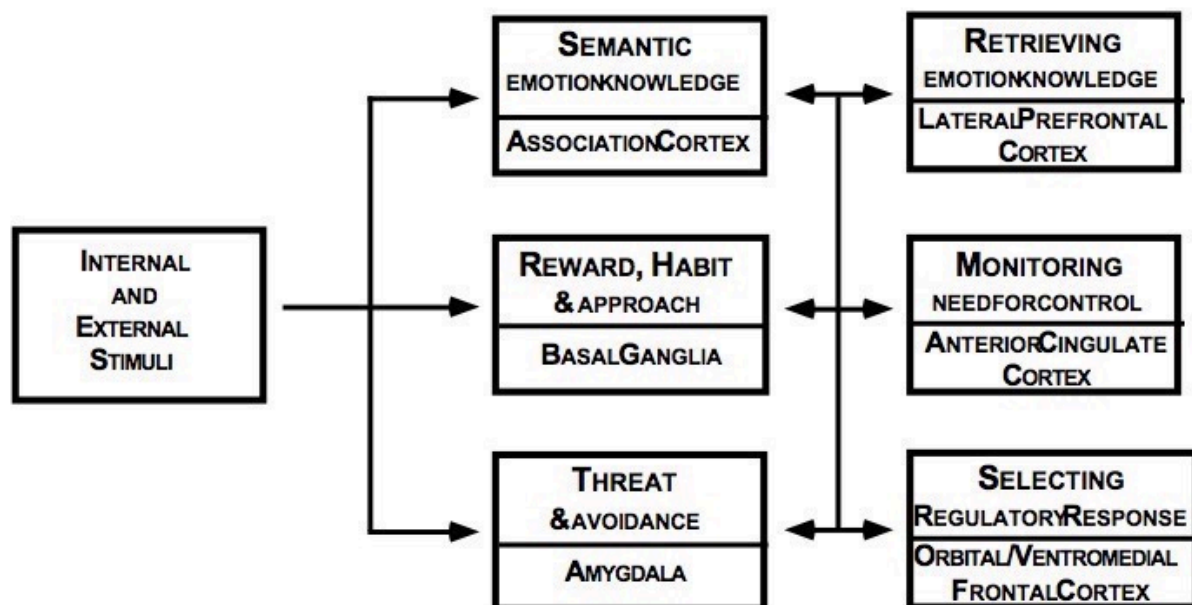
However, aligning with the PSToE, the CAM offers that each emotion category is generated from the “relational structures that integrate multiple parts of experienced situation” (Wilson-Mendenhall et al., 2011: 1107), as “highly variable set of instances that are tied to the situation you are in” (Campbell & Barrett, 2017). While this control process is automatic, running implicitly, it is discoverable consciously, as “emotion is constructed as sensory information flows through a series of evaluative processes that are hierarchically organized from automatic to reflective” (Barrett, 2013: 383).

*“The brain constructs meaning by correctly anticipating (predicting and adjusting to) incoming sensations. Sensations are categorized so that they are (i) actionable in a situated way and therefore (ii) meaningful, based on past experience. When past experiences of emotion (e.g. happiness) are used to categorize the predicted sensory array and guide action, then one experiences or perceives that emotion (happiness).” Barrett (2017: 9)*

The Theory of Constructed Emotion (TCE) extends CAM by specifying in great detail the neural mechanisms involved in the general processes of creating situated conceptualizations and generating emotion categories. TCE builds upon the work of emotion researchers in discovering the components of classical emotion circuits, yet re-conceiving how they function systematically from both bottom up and top down paradigms. Five distinct neural systems were identified early by Ochsner & Barrett (2001) as being involved in the automatic and controlled processing of emotions. The automatic processes (1) detect potential threat (regulated by the Amygdala), (2) detect possible rewards (regulated by the Basal Ganglia) which together describes a system which manages avoidance and approach behaviors. Controlled processes kick in to control (3) activation of semantic knowledge that contextualizes the stimuli and helps to form strategies for dealing with it. The fourth and fifth systems (4) discriminate between possible responses and (5) evaluate the meaning of the response and select the best choice.

Straying from the positivist theories of emotion which seek to locate specific emotion circuits in the brain, these five neural systems are instead envisioned to be able to process all emotions generally, through general purpose neural components which process not simply emotional content, but are integrally involved in cognition and all other processing (Barrett, 2013). The proposed neural assemblies involved in each one of these systems are identified as (1) the amygdala, central to early

detection of important stimuli from the environment and determining certainty of threat. The (2) Basal Ganglia are involved in encoding implicit behaviors which in the past have lead to reward and avoided punishment. The (3) left lateral prefrontal cortex generally is involved in storing and retrieval of semantic information and episodic memory, both integral in schematized knowledge, connecting valence with stimuli and forms explicit judgments independent of the implicit judgments of (1) the amygdala. The (4) Anterior Cingulate Cortex is central in executive control of mobilizing behavior and regulating pain and emotional conflict while the (5) Orbital & Ventral Medial Prefrontal Cortex guide controlled judgment and decision making.



**Fig. 12.2** - Neural Components of Emotion Processing - *Source: Ochsner & Barrett (2001: 66)*

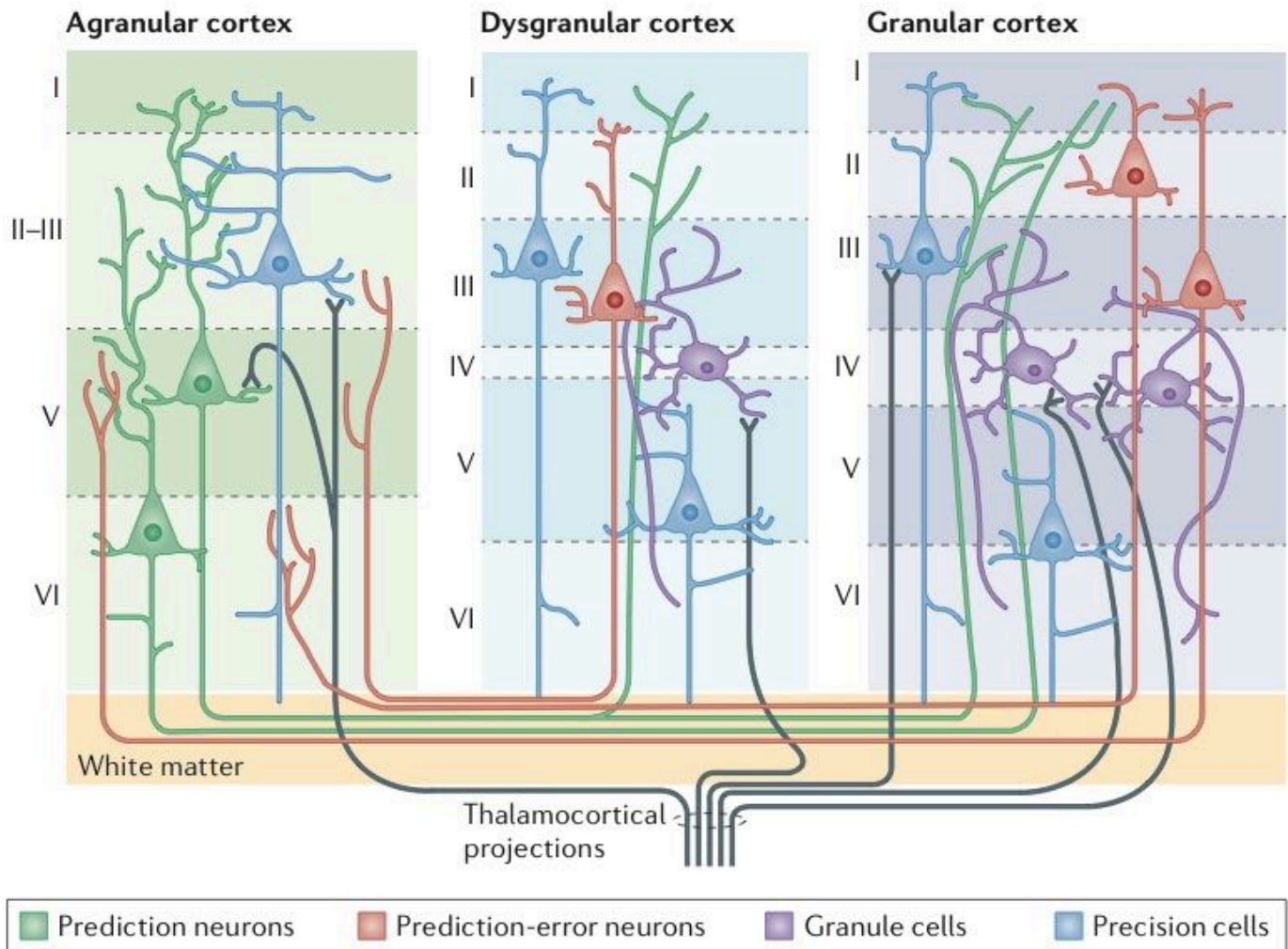
Barrett reconceptualizes emotion as generated not from specific emotion circuits but instead as the natural processing of generalized cognitive modules, evolved to integrate feedback information from the body with motor control and executive functions. Integral to this reconceptualization is the role of categorization, conceptualization, and prediction and locating them in neurophysiology through advances in neurological structural and functional analysis. These advances have come from the interoception research covered above, enhanced understanding of the predictive wiring of the sub cortex, as well as from studies focusing upon neural allostatic regulation (Sterling, 2012) of the body according costs and benefits. The Theory of Constructed Emotion (TCE) postulates that the brain

creates an internal model of the both the body and the social situation and through simulation actively predicts towards what state to regulate the model and the body to best be prepared in anticipation of information from the environment, a “hypothesis (that) is variously called predictive coding, active inference, or belief propagation” (Barrett, 2017: 6).

Predictive coding is implemented through a neural computational architecture embedded in the wiring of exteroceptive and interoceptive processing deep within the sub cortex, in highly connected hubs of the visceromotor system, the same system also engaged in homeostatic control of autonomic, immune and endocrine systems (Craig, 2010). On a moment by moment basis, autonomic feedback via the vagal and spino-thalamic afferent pathways inform visceromotor components of the precise state of the internal viscera. Sensory information from both internal and external sources are processed to compose the next moment’s predictions using unanticipated information from the environment as prediction error to be compared to anticipated. A new set of predictions for both sensory and motor control is computed through the coordination between the limbic sensory cortex (AIC) and the limbic motor cortex (ACC), creating new efferent signals readying the senses to anticipate new sensation both internally and externally, as well as readying the body for the next action. “Their consequence for allostasis is made available in consciousness as affect” (Barrett, 2017: 7).

Prediction is conjectured to be the actual firing of a neuronal cascade across sensory areas representing the conceptual aspects of a stimuli in anticipation of the experience of that stimuli. Thus, imagining eating an apple triggers the visual, gustatory, auditory, as well as tactile motor cortices so that when actually taking a bite, the body is prepared and activated for experiencing the apple, with very little prediction error. The expected crunch of the apple would produce error, say if the apple was overly ripe and full of worms, which would register as prediction error since it deviates from the expected, triggering the salience network to notice the unexpected event of biting into a rotten apple. That might trigger the feeling of disgust accompanied by a reaction of spitting out the bite and the encoding of the entire assembly into memory. Thus, the brain only encodes those unanticipated events which create prediction error and generate emotions that become consciously salient. Apples that taste as expected are a ho-hum and forgettable affair, whereas the mushy one picked from a tree might remind one of the highly memorable time of finding a half eaten worm.

The Theory of Constructed Emotion locates this functionality in the complex wiring of the primary sensory cortices, which are layered in laminal sheets containing three types of neuronal assemblies. The structure reveals that feedback and feedforward channels are built into the layering of signal processing, with layers having different types of neurons having different functional processes.



**Fig. 12.3** - Intra-cortical Architecture & Inter-cortical Connectivity for Predictive Coding -

Source: Barrett & Simmons (2015: 2, Fig. 1)

Above the laminal processing structure of the sub cortex, the TCE describes the domain-general networks functioning as higher level control systems participating in the basic functioning of this predictive system. The TCE posits the Default Mode Network engages in the categorization and guidance of sensory and motor movements through the re-presentation of concepts *semantically* (Barrett, 2017: 12), initiating a cascade of predictions from multimodal summaries that eventually

route to sensory and motor cortices (2017, 14).

The Salience Network (Menon, 2015) is involved in the control of attention, discriminating which signals and sources of prediction error are relevant to the situation and thus worthy of updating the internal model. Precision signals targeted by what's deemed salient are amplified, adjusting the resources of the body towards their stimulus source. Signals which produce unanticipated error are especially salient and are chosen by attention for encoding (learning) and transmission via efferent (top down) channels to update the internal milieu via autonomic, immune and endocrine systems. The neurons of the salience system can also modify incoming sensory information, indirectly affecting and limiting perception in ways analogous to inhibition of non-salient information (Barrett, 2017: 12).

The preemptive style of prediction with correction yields a model for managing energy resources at the time they're needed when encountering anticipated stimuli from the environment. The body is kept in a state of relative energy conservation (homeostasis), while at the same time, the brain is continually activated in patterns closely matching the expected next moment from which it can quickly adjust and revise predictions. Being at rest where stimuli may require the vast recall of energy reserves would take both precious time and require huge swings in energy which may or may not be available on command. Yet, the sensations of the functioning autonomic system are experienced without the conscious knowledge that the brain is predicting what it will next see, hear, taste and feel emotionally, and the conscious register of an emotion doesn't precede action, but rather follows from action (Barrett, 2017).

Huron's (2006) ITPRA model (**Fig. 7.1**) of expectation provides a well studied model of emotion generation in music, a modality thought to be an ancient cultural form essential in hominid symbolic development (Mithen, 2005). The ITPRA emotion model of expectation (prediction) could serve as a high level framework for the functional ordering of neural systems interactions. Recall, ITPRA was a model of the expectation systems active during auditory processing of music. ITPRA stands for the temporal ordering of Imagination, Tension, Prediction, Reaction, and Appraisal expectation-response systems divided into pre-outcome and post-outcome responses to some event. Quite generally, ITPRA's steps display a reasonable correspondence with the functional specialization of the large scale neural systems with central cortical regions active in each step.

Imagination begins an expectation cycle involving imagining and evaluating possible outcomes, corresponding to the functional domain of the Default Mode Network (DMN). The Tension response focuses attention and arousal dependent on the salience of the anticipated outcomes, the functional domain of the Salience Network (SN) with its rAI+ACC functional core modulating the ANS. Both the Imagination and Tension steps are pre-outcome to an event. Then the stimulus occurs and immediately (within 120 ms), the Prediction response evaluates the expectation producing positive valence for correct predictions or negative valence for incorrect, which could be involving the Intra-cortical Architecture & Inter-cortical Connectivity for Predictive Coding and error computation (Barrett, 2017). The Reaction response is fast and automatic to some stimuli, weighted towards self-protection, involving the implicit somatic bodily threat response, modulated by the Central Executive Network (CEN) rapid control or release of the VVC's vagal brake. Finally, the Appraisal response is a slower assessment process producing positive and negative reinforcement (learning) weighted towards failures of anticipation, involving the hypothalamic-pituitary-adrenal (HPA) axis for threat reactivity and neurotransmitters used to encode prediction error to update the internal model via learning.

Thus, a possible correspondence generally of the ITPRA steps with large scale system functioning would be:

1. Imagination :: Default Mode Network (DMN) / Mentalizing Network (MENT) / VMPFC - PCC
2. Tension :: Salience Network (SN) / rAI+ACC & OFC
3. Prediction :: right anterior insular pattern matching with previous emotional moments
4. Reaction :: Central Executive Network (CEN) / Mirror Neuron System (MNS) / DLPFC - PPC
5. Appraisal :: HPA axis regulation and neurotransmitter encoding of learning

Since music, often producing strong emotional and attentional motivations, does not require processing semantics and focuses emotion generation and expectation responses without involving another party, it makes for an ideal test model in brain imaging studies to confirm the TCE, the interaction of the large-scale brain networks (SN, DMN, CEN) and the Polyvagal emotion subsystem interactions in the production of emotion. Additionally, individuals for whom have deficits in social perception of emotion, such as autistic individuals, show strong preferences for music, while also showing average acquisition of the affective qualities of music, and for some, greatly enhanced

musical abilities such as pitch discrimination (Molnar-Szakacs *et al.*, 2009). Additionally, there is evidence that autistic individuals show functional connectivity and switching differences of SN, DMN, and CEN (Uddin & Menon, 2009). Brain imaging studies of autistic subjects both in engaged production of and “observational” listening to music in both isolated and interpersonal settings would provide fertile grounds for a second-person neuroscience (Schilbach *et al.*, 2013).

Thus, according to the Theory of Constructed Emotion, humans are wired for anticipating external events, whether to avoid potentially dangerous stimuli or approach beneficial stimuli. The brain reacts not to events in the world, but rather constructs and predicts, agreeing with the Response->Event -> Emotion pattern, turning the stimulus->response paradigm on its head, as the TCE describes a paradigm where “perception follows (and is dependent on) action...calling into question classic models of emotion” (Barrett, 2017: 7). The TCE also, in essence, dissolves the distinction between the central and peripheral nervous systems, as from the brainbody’s perspective, it is one big integrated system (Barrett, 2017). The Theory of Constructed Emotion takes a big leap in mapping the neurophysiological systems engaged in prediction to metallization, tying together the two halves of classic dualism.

How did this system arise and how does it wire up during development? The answer, according to Nobel Laureate Gerald Edelman, lies in the neural competition between neuronal groups which occurs after birth, during the critical attachment period during infancy and thereafter especially over the course of language acquisition. Predictive wiring of the central and peripheral nervous system ratchets up with experience from the external world. The end result of this wiring is a system that can engage in a natural, hierarchical process called Learning.



## CHAPTER THIRTEEN

### Neural Darwinism & Learning

*“Whether events are considered novel or repeated is not just a property of events, but of the system used to categorize them. Every event and circumstance in the world can be considered as unique or as a repetition of an earlier event, depending on the system of categorization used. A system of categorization that experiences each event in the world as unique is useless for making decisions. Natural selection, therefore, will act on the organisms’s systems of categorization, so that each encounter with the world is perceived and processed in terms of instances of recurring categories. What makes a particular partitioning of events into classes useful to the organism is whether a decision rule based on that categorization leads to adaptive outcomes. For example, deciding between fleeing or not fleeing requires categorizing situations by the cue ‘predator present’/‘predator absent.’”*  
Tooby & Cosmides (1990: 408)

Neuronal Group Selection (NGS) provides a evolutionary neurological theory to explain the innate program for wiring of the brain, which prepares for and allows a global mapping of the external world internally (Edelman, 1985). In great detail, NGS describes a neural darwinian selective process that explains the dynamic plasticity of the brain through the training and competition between groups of neuronal networks. These networks process information from the environment and are selected through group selection of adaptive behavior. While the details of the theory are complex, NGS in effect outlines a neurological theory of how the acquisition of information through perceptual categorization modifies brain structure and functionality, allowing the brain to be wired dynamically and adaptively to the particular environment outside of a strict genetic code.

The ability to categorize, which in humans is most evidently expressed through language, as envisioned by the Conceptual Act Model, is the basic act of perception, occurring automatically on a moment by moment basis. Neuronal Group Selection posits categorization is an essential automatic process of perception that must be explained at the neurological level, since those theories lacking a

direct neural substrate in their explanation represent simply “a phenomenological description at the functional level” and leave open “an infinite variety of possible neural explanations” (Edelman, 1985: 294). However, rich categorization alone is insufficient to explain adaptation, which requires sophisticated primary and secondary repertoires of behavior selected for during evolution (p. 292).

The NGS theory outlines a theory of learning which matches generally the evidence presented of emotion emerging from situated conceptualization, as well as connecting indirectly to semantic meaning and symbolic interactionism. The NGS learning theory provides not only important explanation of the connections between emotion and behavior, but also provides a key insight into the process of development. NGS outlines a theory of learning that combines both classical and operant conditioning, utilizing the existing neurophysiological regions (limbic system, hypothalamus, etc.) able to internally represent outside stimuli and provide a representation of the world.

NGS posits learning requires two-steps. First, the training and populating of the innate neurophysiological system with information from the environment (categorization via the conditioned stimulus (CS)), then secondly, adding a step which associates these categories with behaviors that in the past have provided adaptive advantage (learning). Classical conditioning provides the mechanism to create an internal representation “when the conditioned stimulus (CS) predicts the unconditioned stimulus (US) in a context related to **VALUE**” (Edelman, 1985: 296). This value is represented by evaluating outcomes of events as positive or negative which are non-consciously, dynamically categorized, essentially the definition of Core Affect’s valence and the process of emotion construction.

A second step of learning via operant conditioning, or of remembering which categorized behaviors provided advantage based on environmental stimuli, is conducted via inferences against the internalized representation (Edelman, 1985). The operant mode involves not only selecting the categorization from the stimuli, but also selecting the appropriate behavior from a remembered repertoire based on previous stimuli (situations). The learning step involves associating adaptive actions as part of higher level of categorization (Edelman, 1985: 298). Yet, the means for categorization must exist before learning can take place, and NGS posits a theory of neural substrate which provides the capability of the brain to categorize everything from the environment innately, so that it can be organized for inference and learning, the latter which makes categorization adaptive

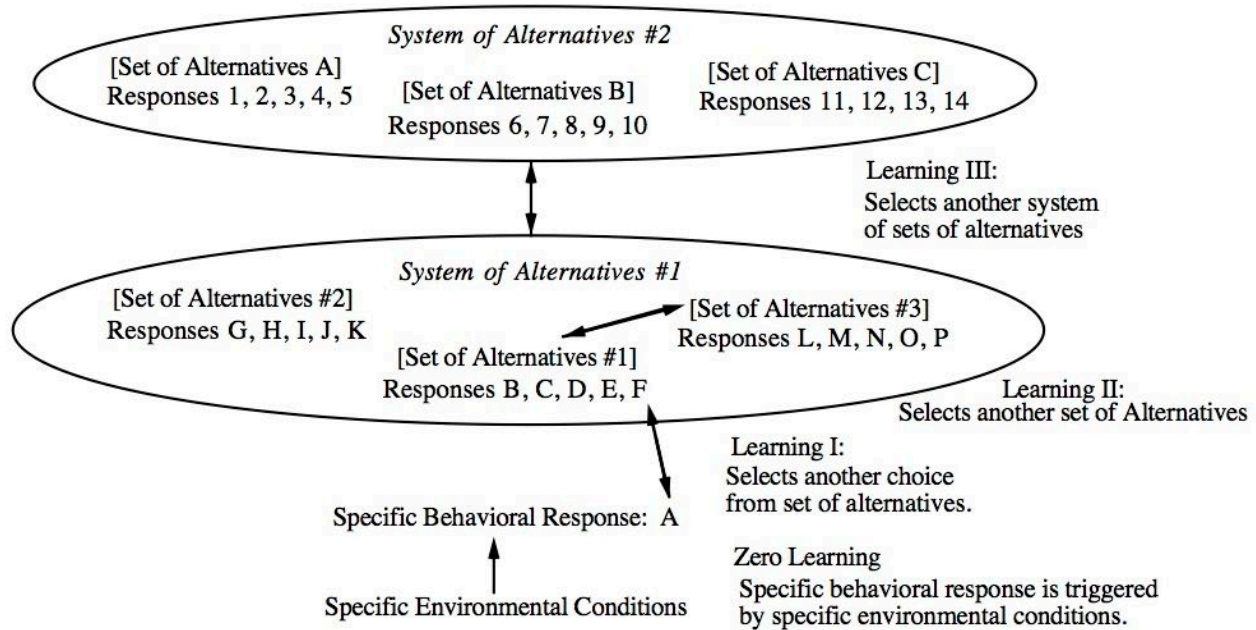
(Edelman, 1985: 296).

The (repeating) stages of learning outlined by Edelman (via Staddon 1983), resembles a responsive style of emotion: “(1) novelty or surprise → (2) “inference” → (3) action → (4) new environmental situation → surprise” (Edelman, 1985: 299). Novelty or surprise from the environment creates a salient stimulus which causes an innate inference (appraisal). The appraisal motivates an action to be taken which feeds into the next situation, resulting in another novel salient feature that generates another surprise, beginning the cycle over. Set in the context of social behavior and emotion, the operant learning process described by NGS fits the Theory of Constructed Emotion, which models the cycle of expectation (prediction), inference (simulation of situated conceptualization), action (new error prediction) and the memorization of adaptive behaviors (encoding of prediction error). Essentially, then, NGS provides not only details of how the neurological system evolves during development, but also offers a theoretical model of how learning can be driven by the categorization of behavioral responses to emotion (prediction error encoding) which result in value changes.

Thus, learning is embedded in perceptual experience in which the computation of prediction error is greater, producing unpredicted reaction and emotion to make the event salient. Emotion constructed during the encoding of situated concepts into memory provides a salient affective cue for memory retrieval and symbolic categorization of the event with other like-events. Novel experience then becomes our greatest teacher, in that direct experience can contextualize and help to redefine what has been previously learned generally (culturally) via transmission of knowledge from others, ie being told what others know. This cultural form of learned content comprises the majority of our knowledge about the world. However, experience corrects cultural knowledge, which may be too general for all situations, representing error correction to culturally naive or folk wisdom which may not fit contextually, or may simply be wrong.

Edelman’s neural characterization of categorization perception and higher orders of categorizing as learning resembles the secondary-processes of upper limbic areas in the nested BrainMind hierarchies of **Fig. 9.5** that reorder and control primary level processes. It also resembles a theory of different logical levels of learning put forward by Bateson (1982), who adapted Whitehead and Russel’s Theory of Logical Types, from their *Principia Mathematica*, which sought to solve the

paradoxes arising from certain conditions of mathematical logic. Similar to the age old paradoxes of the Cretan Liar or the Barber whom shaves all whom do not shave themselves, problems arise when a class and members of a class are compared. However, in formal logic, a class cannot be a member of itself, nor can a member be that of a class because they represent different levels of abstraction, or different logical types.



**Fig. 13.1** - Logical Typing of Learning - Source: Dilts (2014: 5)

Bateson (1980: 190) recognized the very process of perception is an act of logical typing, creating potential for paradox often encountered in human and animal communication, when the semantic meaning at one level is conflated with the contextual meaning at another, or vice versa. The difference between the two result from the context referring to the message, not part of it, representing a higher order of information about information. Logical levels are essential to both categorizing communication and behavior. Even no message is communication, with a contextual meaning (Watzlawick et al., 2011).

Behavior, too, can be contextualized separate from its stated or apparent meaning, as gesture or other non-verbal social cues can be about the behavior. Animals exhibit a similar dichotomy when engaged in play. Dogs employ a front leg bow signaling to another that the actions taken in biting, wrestling and roughhousing, nearly identical to actual aggression, are actually only simulated play.

Many researches have characterized play as important for learning to control aggression (Bateson, 1982). Bateson famously noted that many miscommunications occur because of mismatches of logical type, resulting in not simply misunderstandings, but comprising the heart of mental psychopathology as his double-bind theory of schizophrenia famously posited (1982). Bateson's model encompasses basic logical levels shared by all species (zeroth & first Orders) up through higher order levels which only humans achieve, establishing an evolutionary model for the construction of higher order representations.

Different logical types also apply to learning, nested hierarchies of categorization, the effect of learning by integrating, and reorganizing previously learned categorized information into a new higher order pattern. Categorizing a category provides a second order difference that encompasses and integrates the previous order of organization into a different configuration of ordered sets. Bateson offered not a formal theory, but a framework for modeling different reorganization of categories via learning. Bateson's model represents a nested hierarchy of learning that advances from initial automatic perception and reaction to stimuli (zeroth order), learned behaviors in relation to stimuli (first Order), and adaptive behaviors from a repertoire of behavior (second order). The first two orders represent classical (perception/reaction) and operant conditioning (learning) while the next higher represents learning how to learn, which Bateson envisioned as a human trait.

Bateson studied communication across human cultures, within families, and even across species such as dolphins, dogs, and primates, observing that communication contains both digital and analogue components. The former serves as the (literal) denotive meaning, with the latter as the meta-communication about the message. These two channels produce different orders of information, the former being the message itself while the latter putting the message into context.

The abstraction of logical typing is built into the working of a brain able to create higher order *representations* of representations, leading to new categorizations of categorized content. The structure of learned content such as mathematics, emotion categories, social relations, and many other categorical forms produce structured categories, particularly in language and communication. While other species may have the ability to learn through this method, humans have a symbolic language system which makes sharing of categorization essential to higher level

development.

With regards to emotion, the emotion categories produced from the structure of social relations in **Fig. 8.5** (one category, two category, three category, etc) clearly exhibit differing logical levels. According to Thamm's (1992; 2004; 2007) E-S model of Power and Status theory of emotion, the relational dimensions producing structurally different categories of emotion come out of comparisons between different aspects of expectations and sanctions for behavior, which incorporates social structural dimensions according to power and status. Thus, the different relational processes in **Fig. 8.4** would appear to be different types of categorization, which create a hierarchy of re-categorizations of perception and upward.

A hypothesis of this study is that the construction of emotion come from hierarchic re-categorizations of Elemental emotions (one category) are recognized through perception and differentiation of natural categories. Attributional emotions (two category) are discerned through typology of perception leading to classification of objects (persons) according to power and status. Distributional emotions (two category) are discerned through differentiation of behavior of persons. Interactional emotions (two category) are discerned through classification of types of interaction between types of behavior. Subtle emotions (three category) are discerned though the combination of Attributional, Distributional and Interactional dimensions together. These emotion categories are discerned through semantic labeling of emotion, but are tied to the Situated Conceptualization involving all the concepts associated with the situation.

However, discernment of these relations between stimuli emerging within social behavior, vastly often verbal behavior, presents a problem of how the hierarchy of complex relations are acquired without explicit instruction or through explicit socialization processes. A branch of behaviorism which extend Skinner's (1957) behaviorist analytic applied to human language and cognition, a work that was subsumed by the cognitive revolution which launched simultaneously, has continued and developed into applied contextual behavioral science (ACBS), which is anchored by an empirically based theoretical paradigm of Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). Essentially, Skinner offered that behavior is seen as being shaped by a social, verbal community offering verbal operants which when conditioned leads to learning. RFT expands upon this fact by offering a set of primary relational building blocks acquired through verbal operant

conditioning may be applied to novel, unconditioned stimuli that result in relational responses providing necessary cognitive operations for the construction of hierarchic verbal and lingual skills (Hayes, Barnes-Holmes & Roche, 2001).

RFT offers two generalizable types of relational responding. Non-arbitrary relational responses (NARR's) signify conditioned responses directly related to physical aspects of the stimuli such as color, size, shape, and quantity. NARR's remain tied to that conditioning, whose application to distinctly different stimuli result in different or maladaptive responses. However, operant conditioning can also take the form of arbitrarily applicable relational responding (AARR), producing functional "units" that when mastered may be applied to other stimuli to evoke a similar conditioned response. Conditioning of multiple verbal exemplars lead to eventual mastery, which makes available derived relational responses without direct training. Basic relational dimensions of Reflexivity (identity matching of stimuli), Symmetry (bi-directionality of word and image), Transitivity (discriminative responding based on two or more conditions), and Equivalence (likeness of stimuli) are the earliest derived relational responses to emerge in early language learning. The bi-directional nature of language gained via Symmetry enable term or definition recall in the presence of other, even when not previously conditioned.

Beyond these simple relational types, arbitrary applicable relational responses (AARR) form a constellation of relational units that can be applied to novel stimuli, thereby acting as a toolkit of derived relational responses to stimuli based upon context calling for a particular type of unit to be applied. AARR's continue to emerge during early ontogeny for cognitively relating verbal operants through Comparison (more, less), Distinction (difference between things), Opposition (Good/Bad), Analogy (likeness, transitivity), Temporality (before/after), Hierarchy (family roles, types of types), Sameness (equivalence, coordination), and Deixis (indexicality; contextual person/place/time). Applied RFT to early language instruction interventions for children experiencing language deficits, such as the PEAK Relational Training System (PEAK; Dixon et al., 2017), include assessment of which foundational building blocks are weak and a curriculum of instructional for strengthening them to enable their applicability to higher level language operations for which those building blocks are necessary.

While applied RFT training represents a cognitive-behavioral applied science based on RFT's

empirical analysis of cognition (Hayes, 2014) , a sister RFT based applied science for behavior change called Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) combines contextualistic cognitive and behavioral therapies with mindfulness while also "seriously address(ing) issues of spirituality, values, and self, among other such topics" (Hayes, 2014: 640). Additionally, ACT includes emotion and emotional behavior change, which goes beyond strict regiment of cognitive and behavioral focus of RFT, softening it in a more emotion focused intervention. Finally, ACT has been empirically verified "by the gold standard of evaluation: the randomized controlled trial (RCT)" (Wilson et al., 2014: 404). However, ACT's focus upon therapeutic intervention for maladaptive behavior is beyond the scope of this chapter (cf Hayes, 2014)(cf Hayes, Strosahl, & Wilson, 1999).

In all, human learning is driven through language influence upon behavior, through a building up of situated concepts representing the shared meaning of social behavior, while also accompanied by motor/vestibular integration mentioned in NGS theory (Edelman, 1985), as well as wiring emotion with motor control as part of the visceromotor system (Craig, 2015). In optimal situations, this allows for valued action to be selected and culturally transmitted, leading to behavioral complexes which can be modified, improved upon, and spread socially. And this process is subtly part of the process of socialization over the period of extended childhood development, where culturally valued social behaviors and relations are first learned internally, then externalized behaviorally across different contexts. It wires in adaptive behavior while children are protected and growing, driving neoteny of the species, which has been called the most important determinant of human evolution (Gould, 1985).

While categorization of perceptions are recategorized through learning, much of that perception occurs mostly at an innate, unconscious level (Laird, 2012), which lies at the heart of cognition. It is feeling which connects the unconscious processes of self-perception to the conscious level of emotion.



## CHAPTER FOURTEEN

### Self-Perception, Feelings & Identity

*“The essence of the self-perception insight is not that all feelings are about overt behavior but simply that they are constituted from and are about some underlying process. That is, they are based on and provide information about the relationship between some activity of the person and its context. Often that activity is some sort of cognitive processing or act.” Laird (2012: 12)*

While feelings transmitted along the spino-thalamic pathway provide a functional and structural mechanism for mind-body homeostasis, their relation to emotion and interaction require a deeper explanation grounded in psychophysiological research, regulated by perception. Integrating evidence from across many different studies of affect, cognition and interaction, Self-Perception Theory (SPT) presents compelling evidence that feelings operate as feedback from subconscious processes readying the self for action, and this feedback guides and helps to contextualize subsequent action (Laird, 2012). SPT posits that feelings are not the cause of behavior, but information “about” behavior gleaned through the process of self-observation and interpretation (Laird, 2012: 9). Yet, the feelings felt from introspection are imperfect and suffer the same problems of social perception of others, in that we are prone to self-deception and suffer from “inattention, distraction, prejudice, and self-serving misrepresentation” (Laird, 2012: 7).

Self-Perception Theory descends from William James’ (1890) original conception of emotion as a psychological recognition of feelings following action. The widely held common sense view of emotions being the cause of behavior has prevailed since James’ time until mounting evidence from Cognitive disciplines has shown that automatic processes largely guide behavior while associated feelings follow (Laird, 2012). However, rather than reversing the equation, that behavior causes emotion, SPT instead offers a cybernetic theory in which feedback from both serve to adjust behavior across many embedded control systems.

Self-Perception Theory defines feelings to include not simply emotional feelings, but also feelings of motivation, knowing, intuition - signals from the body giving feedback about the relationship between behavior and context. SPT posits cognitive appraisals of feeling give rise to emotions, which guide behavior, although not to the degree we'd expect—feelings have only partial influence with a wide spectrum variance over how closely attuned people are to both internal and external cues arising from events (Laird, 2012). These cues can subtly influence cognition subconsciously, making one prone to misperception and biases of cognition.

Many different sources of natural processes of the body can affect feeling states, and thus mental states. These include the rhythmic hormonal endocrine processes following circadian schedules. Starting with the early morning hours of the day when the pineal gland is active through awakening and the rise of cortisol affecting arousal, through the habitual rhythms which elicit behavior including the hunger, thirst and excretion schedules affecting feelings and surprisingly, affecting cognition. Bodily manipulate through facial expression or posture can produce feelings that align with behavior, such as smiling increasing satisfactory feelings or slouching producing feelings of lethargy or depression. Feelings can also be cognitive, such as the feelings of familiarity, tip-of-the tongue, and knowing often reflect the ease and speed in which a cue or a question comes to mind (Laird, 2012).

Feelings may subconsciously bias cognitive judgment, congruent with the feelings-as-information hypothesis (Schwartz, 1990). One example of a study of rulings made by judges show some judgmental biases occur according to the time of day, with outcomes of judgment affected by the time they are made, such as just before lunch when hunger is high and energy is low compared with just after breakfast. It was found judges ruled more leniently just after breakfast than those times before lunch, when rulings against defendants were more punitive (Laird, 2012). The idea that hunger pangs could be misinterpreted and misattributed as negative impressions towards defendants provide an example of how such feeling biases affect judgment, and reciprocally, other people's lives. Such evidence also challenges cherished beliefs about rationality, which has been shown to be strongly influenced by affect via interoceptive bias (Kahneman & Fredrick, 2002).

Tversky & Kahneman's (1974) study of judgment and decision making made under uncertainty demonstrate that a variety heuristics and biases arise out of cognitive operations susceptible to

influence from feelings, not simply from high valence affects, but even in an unemotional state. Their very first experiments to test intuitive judgment of probability were conducted against mathematicians at a national convention of statisticians, many of whom demonstrated a bias in predicting probability when primed with the wrong answer. Different signature errors have been discovered in intuitive judgment when assessing probability and predicting values, which show both automatic (System 1) and consciously reflected (System 2) judgment can be subject to subtle influences which create illusions of certainty, yet produce incorrect results. The analysis in their studies posited that biases in judgments from heuristic shortcuts were due to “processing” between fast System 1 and slower System 2 processing,

However, two of the heuristics studied by Tversky & Kahneman (1974) seem to not simply showing processing limitations between System 1 and System 2, but actually being heuristics involved in either bottom-up (System 1) or top-down (System 2) information processing.

Availability names the heuristic used when an instance of a category provides enough of a fit that it can be considered an exemplar of the category, causing it to be selected in a misjudgment. It arises when the ease by which instances or occurrences can be brought to mind, the ease of stereotypical recall, makes a category salient and available for selection or influence. While it may not be the ideal example of that category, its exemplary instance gives surety to a close fit. This seems to be an example of bottom-up processing, such as in pattern recognition where global pattern is synthesized from unexpected stimuli.

Oftentimes the recency in memory (availability) of information or resemblance to some problem set under consideration results in effects on quick judgment when additional mental resources would be needed to find a correct answer (Tversky & Kahneman, 1974). It is as if easy access gives emotional surety and overconfidence to a cognitive judgment which ends further search for a better fit, settling on the quick, first plausible fit. Quick and easy information processing of non-affective judgments has been found by psychophysiological studies to elicit “a genuine affective reaction” that is hedonically positive (Winkielman & Cacioppo, 2001: 990). The Hedonic Fluency model posits that fluent processing (quick evaluative information processes) produces affective feedback used by “rudimentary processes of stimulus recognition” (Winkielman & Cacioppo, 2001), available at a conscious level in the form of positive affect or liking. This affective feeling seems to provide an

affective signal accompanying a propositional judgment that acts as the contextual analogue signal to the digital semantic one, indicating how strongly to take the propositional validity of the judgment (Watzlawick et al., 2011).

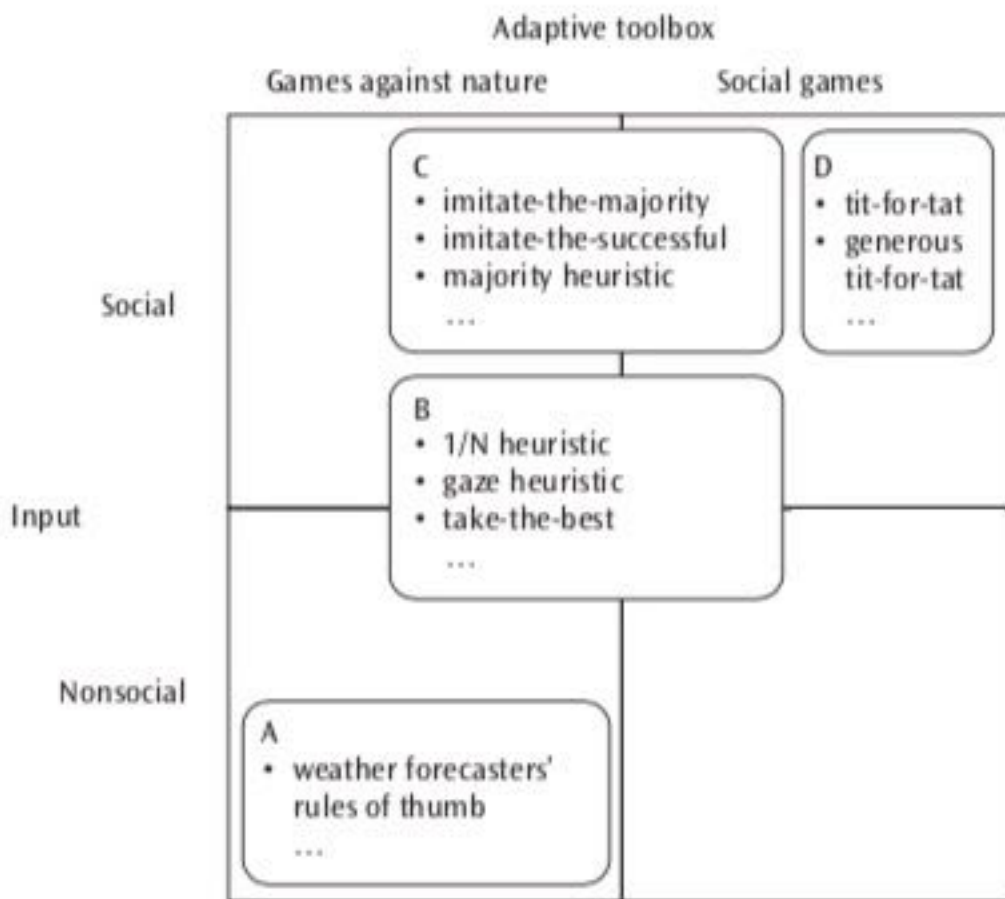
Representativeness names the heuristic used when an instance of something from perception closely resembles the possible outcomes of judgment and is selected as a fit for some category. It arises when perceptions of categories affect the judged outcome regardless of the predictive accuracy, essentially choosing it as a prototype or sort of stereotype for the category. This is an example of top-down processing, in which differentiating between stimuli latches onto a recurrent, salient detail.

A famous example test problem, called the Linda problem (Kahneman & Tversky, 1974), offered a short description of a woman and her activist involvement for social justice and against discrimination and participation in anti-nuclear demonstrations. Then a question asked, which was more probable with four possible answers, that her occupation was Bank Teller, while another answer offered that she was Bank Teller and a feminist. More than 80% of respondents chose the latter description, which has a lower actual probability since not all bank tellers are feminists. Similar tests unearthed a logical fallacy triggered when some priming information causes one to choose a more concrete example when estimating probability, called the disjunction fallacy. The explanation of this finding was the disjunctive choice (Bank teller and activist) was more representative of the description, causing one to disregard its less likely probability. However, it should be noted that while subjects erred in choosing less probabilistic answers, humans have been to think less in probabilistic terms and more in frequency, for when questions were put into terms asking for what would be more frequent, which no longer uses abstract mathematics of probability but includes sensory data, subjects answered correctly, a situation of which has served as a critique of Tversky and Kahneman's heuristic findings in general (Haselton *et al.*, 2016)..

Evidence that combinations of core affect's valence (positive and negative evaluations) and arousal can have differential effects on cognition and reasoning shed new light on cognitive processes previously thought to be separate from emotion. One study found high arousal with positively valenced stimuli enhances semantic processing, while high arousal with negatively valenced stimuli decreases semantic processing (Orlić, Grahek, & Radović, 2014). Valence seems to effect the style of cognitive processing (semantic versus stimulus driven), while arousal seems to have effects on

salience, with high arousal increasing the importance or urgency of the information (Orlić *et al.*, 2014). Other studies have found that high valence affects judgments through automatic heuristics which add bias to cognitive processes. Affective evaluations have been found to be the main determinants in intuitive judgments, with high valenced feeling sometimes overriding the attributions of a category under judgment (Kahneman & Frederick, 2002). Thus, evaluations of stimuli (valence) can influence our perception of the thing, whether that stimuli is externally (extero-) or internally generated.

A larger taxonomy of heuristics offered by Hertwig, Hoffrage and the ABC Workgroup (2013), sorts them according to the inputs they take (social versus non-social) as well as the types of outputs they provide, whether predictions in games against nature or involving dynamics of social individuals and groups.



**Fig. 14.1** - Heuristic Toolbox over Social & Non-Social Inputs Isomorphic Transformation -

Source: Hertwig & Hoffrage (2013: 29, Fig. 1.1)

The heuristic toolbox in **Fig. 14.1**, has been modified from the original, isomorphically transformed by swapping INPUT rows while maintaining the integrity of the taxonomy. Once class of heuristics (A) take nonsocial inputs like consistent environmental cues to compete in “Games-against nature” as in performing “ancestral tasks or their modern equivalents” to assess the probability of some phenomena applied to non-social domains, typified by sayings like “Red sky at night, sailors’ delight. Red sky in morning, sailors take warning” as predictor for bad weather and rough seas (Hertwig & Hoffrage, 2013: 27-28). These often take the form of folklore, encapsulating a wisdom born from collective experience against long observed phenomena. Another class (D) involve social inputs to solve social games involving having to predict and contend with “decisions of other self-interested players” (Hertwig & Hoffrage, 2013: 28). These heuristics are thought to come from adaptive cooperative strategies from game theoretic social situations, such as tit-for-tat heuristics for cooperating successfully with social others, thus have been shown to be an evolutionary strategy which may outcompete individual genetic evolution in group level evolution (Axelrod, 2017).

*“Not all heuristics prove ideal for all tasks. Even within the same type of tasks, different heuristics may fit either well or badly, depending on the characteristics of the environment within which the task is carried out” Hertwig & Hoffrage (2013: 299)*

One heuristic in particular, the social-circle heuristic (Pachur, Hertwig, & Rieskamp, 2013), is particularly instructive of the frugality and accuracy of heuristics in general when compared to memory or resource intensive searches, thus providing some evidence of their ubiquity. The Social-circle heuristic operates when someone given a choice between two recognizable answers turns instead to “poll” one’s social circle, starting with the self in circle zero, and extending outward until either there is a clear consensus between which choice others make, or in the case of dissensus, a continued expansion of one’s circle to others until a clear choice emerges. What makes the social-circle heuristic notable is that it performs remarkably well versus other strategies such as polling the general population, and does so with an even more remarkably small sample size (cf Hertwig & Hoffrage, 2013: 264-285). It does so because of certain conditions in the structure of the social environment which allow it to arrive at a suitable answer in a short amount of hops outward to expanded social circles when compared against the entire population. These conditions are those in which “the event category is considerably more frequent than others,” environments

characterized as “highly skewed” (Hertwig & Hoffrage, 2013: 283).

For explanations of how and what heuristics are used in the adoption and radiation of social norms, in social environments in which there is ample diversity of behavior, ie not “highly skewed,” sample size must be increased in order to propagate social norms (Hertwig & Hoffrage, 2013). However, some social ecologies are highly skewed and insular, with little behavior diversity, for which a small social-circle heuristic search can perform roughly on par to more effortful and exhaustive searches. Thus, the smaller the diversity of behavior, the less information needed to make a normative choice, ie a short search of the immediate social circle. This effect explains much regarding modern attitudes and conformity in a social world which has grown more insular and isolated. Additionally, pressures of conformity from mediated sources diminish the appearance of diversity of behaviors, thus, narrowing the amount of information necessary to perform on par to exhaustive search.

However, while Hertwig & Hoffrage’s heuristic toolbox offers much in categorizing heuristics, its focus upon Social and Nonsocial externalities obscures an important influence upon heuristic biases. Barrett offers, as part of the Conceptual Act Model, two components of experiencing Core Affect (see **Fig. 12.1**) which introduce a bias towards internal or external cues termed arousal focus and valence focus (Feldman, 1995a). Arousal focus is described as the “extent of incorporating subjective experiences of arousal into conscious affective experience,” while valence focus as the “extent of incorporating subjective experiences of valence, pleasantness or unpleasantness, of stimuli into conscious affective experience” (Barrett, 1998: 580). These two focuses produce a general bias towards internal or external cues, respectively, in how people label their own experienced feelings or those from the past (Barrett, 1998). This bias, Barrett concludes, produces effects in emotion processing, where those using valence focus pay attention to the social cues of others in guiding one’s behavior, “resulting in emotional sensitivity to the social environment” (Barrett, 1998: 595). According to Power and Status theory, the corresponding valence produced by an external stimuli comes from an evaluation of the two fundamental properties of the stimuli, its potency and activation (Kemper, 1978). Alternatively, those using arousal focus cues are oriented inward towards feelings, reflecting heightened self-awareness. Those whose focus applies equally to both valence and arousal are best able to discern discreet emotions (Barrett, 1998: 595), giving them better ability to cope with events causing the emotion (Barrett, 1998: 597).

Self-Perception studies identify personal and situational cues which are analogous to internal and external cues, respectively. Sensitivity to internal cues, in studies focused on eating and obesity, show that recognizing satiety or fullness led to eating less, while external or situation cues such as noticing dinner time or advertisements for food, influence overeating (Laird, 2012: 136). However, “externality doesn’t cause obesity” (ibid, p. 132), showing much of the original obesity research has been found to be explainable in that many non-overeaters also tend to pay attention to external cues, which can be chalked up to the fact many “normal eaters” consciously abstain from overeating due to concerns about weight, dieting, etc, while still paying attention to external cues. Studies conducted over the course of a number decades have shown that those whom are overweight or consciously restricting their eating tend to be overly responsive to external, situational cues while being under responsive to internal, emotional cues. Similarly, “repeated attempts at restraint may actually cause a reduction of response to internal cues,” which may lead to “unresponsiveness to internal cues, and hence an over response to external cues” (Laird, 2012: 134).

This internal-external cue dynamic appears in other studies, such as the determination of the source of certain experiences, termed source monitoring. Classic studies of witness testimony show that experiences witnessed can be altered over time by new information or changes to memory, which can lead to different estimations of what caused an event (Laird, 2012: 151). Manipulation of information has been shown to effectively alter the details remembered about an event, leading to mistakes in memory, especially for external sourcing. Similarly, getting someone to distinguish what someone said versus what they themselves said can be altered by having the person imagine what was said in that person’s voice, distorting their internal sourcing and introducing reality distortions. What these findings show is that thoughts and memories about past events are not simply influenceable through external inducement, but are in fact “inferences from a wide variety of cues that reflect only indirectly the events that are being remembered” (ibid, p. 151). Thus, what we judge or remember reflects more about what we are currently experiencing than the experience of the original event, influenced by Self-Perception biases.

Particularly informative are biases which affect our beliefs and attitudes through the phenomena of Cognitive Dissonance, an older theoretical rival to Self-Perception Theory. Cognitive Dissonance describes the unpleasant motivational state occurring when emotions reveal behavior inconsistency



with beliefs. A counterintuitive dynamic occurs when feelings produced by behavior differ from attitudes and beliefs, resulting in changes of belief and attitudes to align with behavior. This produces a sort of self-protective psychological mechanism “designed” to avoid uneasy feelings of cognitive dissonance (Laird, 2012). When previous attitudes and beliefs are inaccessible, the change in attitude is not even questioned and the previous attitude forgotten. However, for those whom remember their previous attitude, the uneasy feeling of cognitive dissonance produces a motivation to resolve it somehow.

In classic Cognitive Dissonance experiments, those whom were forced to comply with behavior going against their attitudes, such as giving a speech on a topic which they have a strong opinion against, allowed participants to subconsciously ease the conflict of expressing a counter attitudinal speech via blaming the “rules” of the experiment and resulting in no cognitive dissonance. When other participants were told they may refuse to give the speech based on their opinions but who decided to participate and performed the speech freely, their resultant attitudes had changed to match the speech. This surprising finding shows the subtle power of induced-compliance through social influence and status protection, especially true when one’s self-concept is threatened by compliance. On the other hand, the forced-compliance served as a reason for the counter attitudinal expression, which relieved one of the need to change attitude, all happening subconsciously.

*“one of the hallmarks of this kind of procedure has been the arrangement of conditions and the experimenter’s behavior so that participants do exactly as asked, without recognizing the degree of social influence that has in fact guided their behavior, hence the origin of the label for this procedure, induced compliance.” Laird (2007: 161)*

In either case, the inaccessibility of previous attitudes and the protection from the feeling of dissonance can help explain the runaway process of behavior which diverges from an original attitude. Take for instance making a decision to cheat or some other act of coercion, perhaps a small one at first. According to Cognitive Dissonance theory, that behavior would produce a dissonance for someone who doesn’t see themselves as a cheater, creating a justification of why it was ok in that instance to cheat. That exception then becomes the basis to cheat again, which again may produce dissonance and again more justification for the behavior, since it is protecting against feelings challenging the self-concept of an honest or ethical person. While cognitive dissonance helps to

explain the mechanism, Self-Perception Theory expands on Cognitive Dissonance Theory to explain a curious exception for those who are more sensitive to personal cues. When one is more sensitive to arousal feelings produced by dissonance and more prone towards changing attitudes, the recognition of internal feelings by those sensitive to internal/personal cues are misperceived as confirmation of an implicit attitude. When those people are reminded of their previous attitudes, their subsequent justifications for their behavior act as post-hoc arguments supporting their feelings (Laird, 2012). This counterintuitive claim shows how effects of subconscious feelings arising from internal control processes can influence and bias rational cognition.

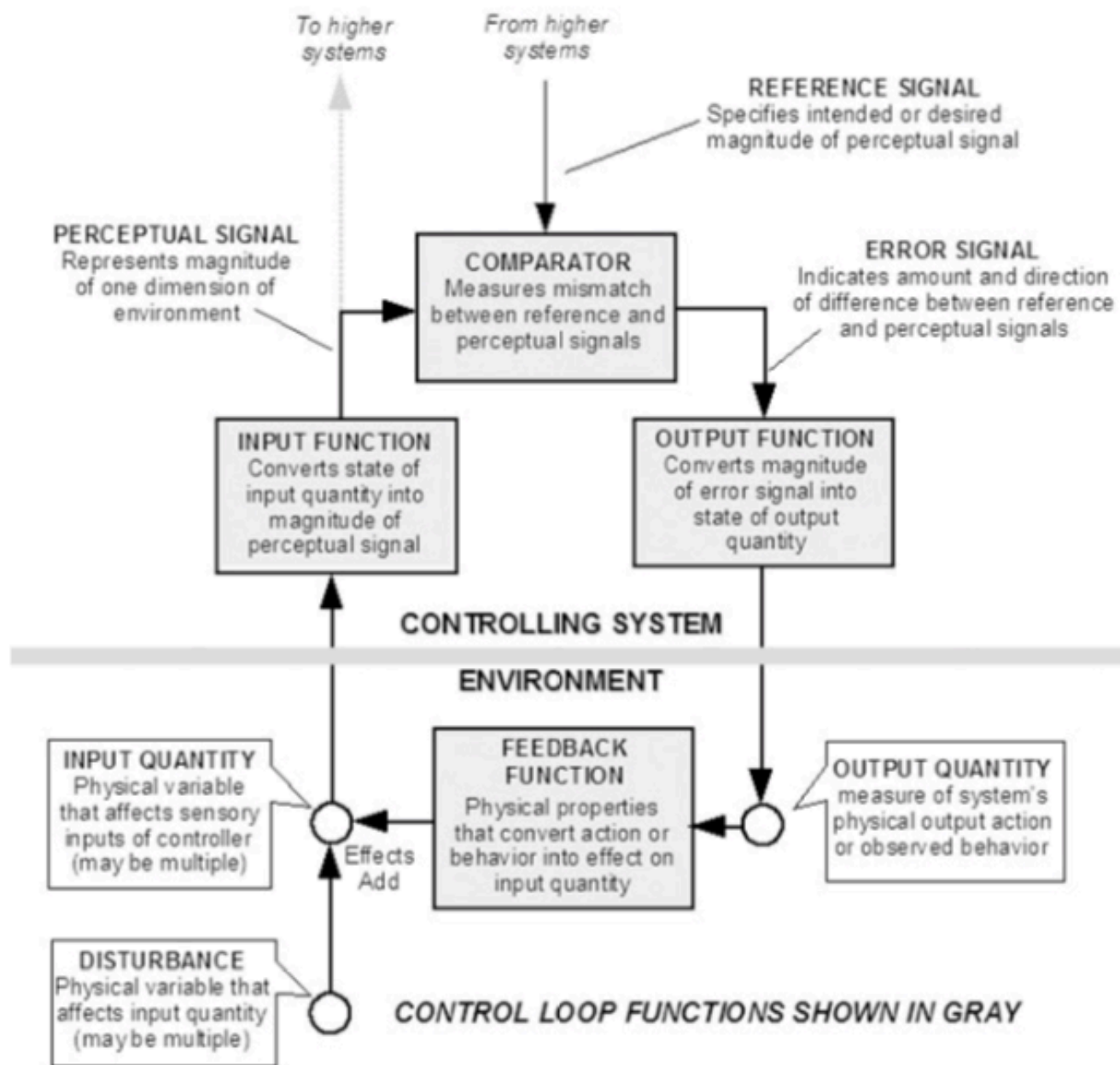
Self-Perception Theory includes an explanation of and integration with Control Theory (Laird, 2012: 194-201; cf Powers, 1973). Control Theory applied to Self-Perception explains why feelings generating emotions seem to be causes of behavior, when in fact they more closely resemble information from the system fed back into a comparator making adjustments to the system before taking another “reading” through feeling. Control Theory (cf Powers, 1973) defines the dynamics of negative-feedback systems which maintain control of automatic processes in biological systems. These systems take in information from the environment, monitor for some tiny fluctuation and make some kind of adjustment before again making another reading. A control system achieves control by monitoring a property of the world and performing some action when it changes, like that of a thermostat monitoring temperature by turning heat on and off when the temperature crosses some threshold. The behavior of the system is not a property of the thermostat, nor is the effect of the system’s behavior truly ‘perception’ of the system. The thermostat simply reacts to the tiny fluctuations of a local variable (internal measure), not of the overall system.

Control systems arrange hierarchically, so that feedback from lower controls systems feed forward or backward in nested hierarchies to achieve complex behaviors. Living systems are composed of fantastically complex hierarchically nested control systems, e.g. the workings within the cell, brain or any complex system. Human behavior, and that of all living creatures, results from control systems, which explain many complex behaviors. Importantly, “emotions exhibit the same kind of hierarchical structures,” such as the autonomic “fight” attack response system, which is composed of separate subsystems controlling “autonomic response, expressive behavior, and overt action” (Laird, 2012: 199). The feelings that feedback in such a system serve as information to tweak any of the subsystems needing adjustment in order to achieve “goals” of the topmost control system. Thus, the

feeling of confidence might lead to increases in overt action, while feelings of sympathy might lead to a sudden inhibition of autonomic activation halting an “attack.”

Self-Perception Theory's control systems represent multiple aspects of feedback from hierarchical systems monitoring different variables in the social and self environments, from aspects of relations with others, to attributional cues or contexts of the situation, to internal cues reflecting one's reaction or readiness to the situation. Ability to monitor one's own Self-Perception of these complex feeling states relies on a balance of Core Affect's valence and arousal biases, composed of internal and external monitoring processes modeling outside and inside of self environments.

Identity Theory, from the Sociological Social Psychological tradition of Symbolic Interactionism, posits a core human control process runs as a semi-subconscious continuous loop producing a flow of meaning towards which people seek to reinforce their identity. The process takes as input a categorical perception felt or expressed as meaning, then compares that meaning to similar past meanings in memory. Their difference produces some error calculation, providing some target intensity of corrective adjustments output as behavior and speech towards reinforcing some shared identity standard as the feedback function. This sense making provides the central loop of the intersubjective experience.



**Fig. 14.2** - Perceptual Control Model - *Source: Powers et al. (2011: 2, Fig. 1)*

The loop begins when Categorical Perception (CP) from a stimulus produces and names the feeling of meaning from the current situation. It then compares that meaning to previously encountered *like* meanings from memory, with exemplar or prototypical meanings holding emotional sway towards some set of meanings having resonance with an identity standard. A neural computation produces an error measure of difference from such a standard, providing a scale to amplify or dampen auto-corrective self-expressive behaviors to bring one's situational self-meaning to be consistent with one's self-meaning standard. Such behaviors provide stimuli for meaning making in both ourself and

others in the form of affective signals, via communicative non-verbal and verbal messages.

Disturbances, such as the reactions of others or feelings within oneself, influence the situation and serve as stimuli for the next loop and subsequent categorical perception.

Identity Theory defines stimuli in two different ways: those which arise from the environment are termed natural signs or simply signs, while stimuli originating from other persons are termed as conventional signs or symbols, sometimes referred to as a significant symbol (Burke & Stets, 2009). The former, natural signs, are indexically linked to a stimuli, while the latter produce a common response (same meaning) and are symbolically shared between persons, such as in the shared meaning of language. Additionally, conventional signs can arise not simply from spoken language as stimuli, but through the various modalities through which affective information can be transmitted, e.g. through gesture, intonation, posture. The common response may be either external through action or internal through thinking, or even perhaps internally through subconscious self-perceptive biases influencing control processes.

This process happens in continuous time, as thought and attention scan across features of the performance invisible to all but the micro-inquisitive eye (cf Goffman, 1967), but registered by semi-conscious external affective perception. Control of perception determines toward what is attended, while self-consciousness provides ability to self-determine attention. This ability provides distinct advantages in human group living, as it helps regulate individual behavior toward both improving individual success & group success. Emotion provides a culturally shaped system defining categorization rules of what stimuli from the social environment are salient and must be attended to, especially in the case stimuli provoking negative evaluations. Yet emotions aren't the cause of behavior; rather, they represent feedback information used by control systems to adjust behavior. One such high level control system, using that feedback to mediate the feelings of the moment and enable choice of self-directed behavior, is conscious deliberative thought.

## CHAPTER FIFTEEN

### Symbolic Reference, the Semiotic & Three Tenses

*“(Speaking of Mead) Imitation...is possible when one observes another’s reaction or response to some situational stimulus and that reaction has already been learned by the individual. That is, the observer already has the behavior or response as part of his or her behavioral repertoire—something he or she already has done and can do. When that stimulus, which calls forth the reaction in the other, also calls forth the same reaction in the observer, the observer sees this commonality and “understands” the other’s reaction, since the observer is already familiar with the response. Because the reaction has already been learned by the individual, the meaning is understood. Moreover, because the response of the observer is also seen in the other, the observer understands that the response is shared. In this shared understanding of the commonality of responses to the stimulus lies the beginning of the symbol. In this case, we have what is known as a natural sign or simply a sign: a common reaction to some stimulus in the environment.” Burke & Stets (2009: 21-22)*

Human infants seem wired to be ready to immediately communicate (Tomasello, 2008), as multi-modal faculties are available at birth (Kuhl, 1997). Only several hours after birth, newborns display a preference for faces, spending far more time looking at a visual image with two circles above a third centered circle (resembling eyes and a mouth) rather than the image turned upside down (Otsuka, 2014). Similarly, newborns soon are able to engage in “acts of meaning” through facial imitation in little ritualized exchanges (Gratier & Trevarthen, 2008). A few weeks after birth, infants take part in “protoconversations” with the caregiver showing “control of breath and vocal projection” along with coordinating the rhythm of interaction using both vocal and whole body actions, as well as turn taking “reflecting norms of verbal communication” and exchange of affect (Gratier & Trevarthen, 2008: 129).

Infant multi-modal perception comes prepared by innate perceptual boundaries which are “tailor made for language process,” such as the auditory attunement to the human vocal range (Kuhl &

Meltzoff, 1997), with particular attunement to “motherese” (Gratier & Trevarthen, 2008). The infant auditory system busily sorts out the consistencies in the ambient language around them through auditory categorical perception. By two months, infants are “able to distinguish perceptual constancy across acoustic examples (high pitch, low register, nasally, etc)” and by six months, simple “exposure to language has already altered infants’ perception of speech” (Kuhl & Meltzoff, 1997: 15). Through Categorical Perception (CP), categorical prototypes are formed for infant vowel categorization, in that across all the different voices, pitches, register and accents to which the infant has been exposed, perceptual boundaries of the vowel sounds particular the infant’s language environment will have been drawn (Kuhl & Meltzoff, 1997). These become stored representations reflecting the distributional properties of language which act recursively to alter the innate perceptual boundaries (Kuhl & Meltzoff, 1997). Prototypical vowel sounds become “culture bound” and represent the accent the child will have for these sounds for the rest of their life (Kuhl & Meltzoff, 1997).

The wiring of the infant representational speech system is polymodal and entails “a rather special interaction that occurs with conspecifics gained through experience... a tape recorder presenting the sounds of language would not trigger it” (Kuhl & Meltzoff, 1997: 8-9). The direct engagement with caregivers involves exchange beyond simply the verbal, as communication involves the “non-verbal semiosis of mimetic expression and sympathetic action” (Gratier & Trevarthen, 2008: 122). The sequencing of gesture, body movement, and facial express help to shape narrative non-verbally, providing a multi-modal display which helps to engage with another in reciprocal motivated ‘enactment’ (Gratier & Trevarthen, 2008: 125).

Categorical Perception seemingly operates in infant facial recognition, where young infants up to 3 months show various preferences for faces over other images of inverted, top-heavy, or scrambled faces (Otsuka, 2014). However, at 3 months and later, after experience with different faces, inversion and other manipulations of images of face-like stimuli no longer induce preferences, which instead shift to more general categorical properties such as gender or ethnicity consistent with that of caregivers (Otsuka, 2014). Habituation and familiarization effects show infants, with far less experience, develop similar biases shared with adults, not simply in perception but also in attentional biases around 3-4 months (Otsuka, 2014). This may be due to the crystallization of categorical prototypes built through engagement with the world similar to vowel prototypes

through exposure to various speakers.

So too, must other modalities of an infants' perceptual world build categorical prototypes through experience with the world, especially with social engagement with the world. Beyond simply the sensory, the social perception of infants must too be built up through categorical perception and the construction of categorical prototypes. The recognition of the mother's face and preference for social familiars over others give some clue (Otsuka, 2014). However, perhaps each of the necessary psychological foundations for human sociality are built using this same neural processes and architecture.

Consider self-other discrimination and joint attention (Tomasello, 1999), marked by developmental psychologists as requisite for human differentiation from our close primate relatives. Reddy (2008) offers these psychological traits are based upon "Cartesian" theories which separate cognitive and affective domains as somehow separate, based on metaphysical ideas of internal mental representation appearing suddenly, while any processes occurring earlier in development or in other species as resembling "zombie-like" processing (Reddy, 2008). Much empirical evidence supports that repeated exposure to social engagement with caregivers and familiars provide the infant with experiential affective moments which "may not only be developmentally primary, but developmentally necessary" for the scaffolding of these later psychological milestones (Reddy, 2008: 136). In infancy, second-person social engagement involves exchange of affect which stimulates responses producing affect and subsequent responses in a back and forth between caregivers and infant. Reddy (2003) argues that second-person mutual engagement occurring early in infancy slowly builds a bridge between first-person subjective and the third-person objective "categories" of social perception, as well as the differentiation of self-other knowledge.

Particularly, the experience of attention felt by the infant, initially from the gaze of the caregiver but later from all types of mutual attention in social interaction, are requisite, temporally prior, and not simply similar but primordially concordant with latter representation of attention (Reddy, 2003). Reddy (2008: 135-136) outlines the variety of different social situations and contexts in engaged mutual attention that expands the infant's emotion awareness. The experience of attention paid by caregivers help the infant experience attention to itself first to the infant's own



Self, then to the self's body, to the self's actions, to distal objects in space, to objects in time such as past events detached from immediate stimuli. Direct social engagement of the infant with familiars provide a rich social context in which the infant learns to both manipulate attention from other people through clowning and teasing (Reddy & Mireault, 2015), while also recognizing attention others pay to objects from an observational point of view (Reddy, 2008).

The social actions of infants in reaction to affective stimuli, and the subsequent reaction of caregivers to the infant's actions, produce countless opportunities to build categories of mental representations throughout the first year. These must surely be taking shape categorical prototypes, analogous to the vowel prototypes from experiential social listening constrain vowel vocalization (Kuhl & Meltzoff, 1997), wiring the constraints of social competencies for facial recognition, social signaling, etc enabling social identity and signal reading later in life. The experience of this affective back and forth provokes affective reactions, in addition to the observed affect shown by others which too is felt proprioceptively, both internal to the infant (Reddy, 2008). The infant experiences its own reactions from the social stimuli, which also draw attention from the caregiver, eventually coupling the directive with those actions eliciting reactions. The building of competencies in the infant for initiating and eliciting affective interchanges, thought to involve the neurological reward centers (), must too produce new categorical prototypes and higher orders of categorization (Edelman, 1987), ones that are plastic and can be modified, as opposed to the vowel prototypes.

There comes a crucial point around the first year, when the infant grasps its actions, reactions and subsequent internal feelings, however those are represented in the prelingual infant, are shared in symmetrical and complementary forms of affect exchanged with the caregiver across modalities. The infant becomes able to represent other's representations, the re-representation of another's representation, providing the first leap to a second-order type of social perception. The account by Hellen Keller of her recognition of the pouring of water and simultaneous hand-sign of the term water, may have been such a moment moment, only one occurring at an age in which explicit long-term memory has developed and allowed access built atop , whereas the young infant has yet not. Yet, because it is occurring in the infant before language, some other communicative medium or protolanguage, spanning the spectrum from feeling to thought, must be underlying language.

*“The question we must ask is not whether language is a good vehicle for conveying and inducing emotions in others, but rather whether the ability to produce a symbolic interpretation of signs of another's emotional state provides empathic capabilities that are inaccessible without it.” Deacon (1997: 428)*

Deacon (1997) lays out an evolutionary path for the emergence of the capacity for language and culture, averring that human language must have arisen for want and desire to exchange emotional states with others. Deacon posits humans made that great leap by developing higher level abilities to interpret social information via new learning processes, where a symbolic interpretive competence represented a higher ordering of iconic and indexical interpretations (de Villiers, 2006). Similar to Bateson's (1974) Logical Typing, these represent different logical types which emerge from different forms of learning and represent the inner language of the mind. Similar to Edelman, Deacon insists that understanding how different types of learning could span from innate to cultural requires embedding it in neurological realities so it doesn't simply guess at the actual neural implementation (Deacon, 1997). He offers a model in which a hierarchical system of signs provides a continuity from simple perception and learned association (shared with other species), to cultural learning and ultimately higher order logic, the latter which seems to be sole province of humans (Deacon, 1997).

Animals have simple referential abilities, and our closest living relatives, bonobo primates, have shown extraordinary ability to use iconic and indexical referential systems (Savage-Rumbaugh, 1996). Kanzi, a young bonobo who observed as his mother was taught sign language and a simple indexical reference system, eventually learned hundreds of indexical “words” through simple observation rather than direct instruction (Savage-Rumbaugh, 1996). Kanzi's early observational exposure to indexical training likely provided a huge advantage, since similar to humans, there is a window in early development which allows for the acquisition of language, after which, acquisition of language fluency becomes very difficult, as any adult trying to learn a foreign language would attest. Kanzi and several other chimpanzees, Sherman and Austin, have arguably been able to approach the symbolic threshold in acquiring new vocabulary and relating it to abstract categories with little effort, which other chimps similarly trained in indexical communication have been unable to do quickly (Deacon, 1997).

Mimesis defines the supra-modal motor-modeling capacity which enables the whole body to be used as an indexical representational device (Donald, 1993). This early adaptation of humans was able to be voluntarily retrieved from stored memory via “Autocueing,” which rather than requiring an environmental cue to trigger a memory, represented a new type of control over the environment (Donald, 1993). Mimesis allowed for the rehearsal and refinement of voluntary fine motor control necessary for transmission of instrumental skills (e.g. toolmaking), in culture making. Memetic routines could be brought to mind and referred to through enactment or pantomime with others. This ability is hypothesized to be the step between cognition and language that separated human communication from environmental reactivity (Donald, 1993). However, apes do not have the ability of autocueing (Donald, 1993) and are tied to iconic and indexical environmental cues, which places their language capabilities below the symbolic threshold in a hierarchic model of representation (Deacon, 1997).

Iconic reference serves as the base of these tiers, which refers to things in the world in a one-to-one mapping directly emerging from perception. A mental image of an iconic reference will directly refer to that thing without any other reference necessary to recognize it (Deacon, 1997). The icon is not a property of the thing itself, but arises from a resemblance to the thing. Computer icons are perfect examples, where the icon calls to mind the program which it represents in a one-to-one match. Vervet alarm calls are another example, allowing vervets to communicate when an eagle predator is hovering overhead with one call, while another alerts that land predator is lurking in the brush. Iconic references are related directly and immediately through recognition.

Indexical references are related to things represented spatially and learned through association. They refer to a set of iconic references that refer to things from past memories or experience, which then can represent something through an association created by a conditioned response (Deacon, 1997). They are like something pointing to something else, such as the smell of smoke associated with fire. The smell of smoke itself would be an iconic reference, which could bring to memory a previous time smelling smoke, iconically referring to the memory of a fire. The correlation between the two then become indexical, in that they’re paired in memory, so that the smell of smoke could become an indexical reference to fire. Animals are able to use indexical reference, which can be taught via conditioned response (salivating to the sound of a bell), or even learned via simple observation in the case of Kanzi’s extraordinary language abilities (Deacon, 1997).

Symbolic reference emerges from social learning of the relationship between indices, where language provides a system of words defined by and related to other words (Deacon, 1997). It creates a formal system of higher-order relationships which do not necessarily refer to something real, giving words their abstract nature and our ability to think and communicate in abstraction. The effort to build indexical relationships can be reduced by linking symbolically, which thereupon requires simply adding another symbol and relating it to other symbols. Deacon refers to this step as offloading the burden of remembering the many indexical relationships to an external memory aid, the symbol, which reduces the amount of information required to sort through symbolic relationships to recall a reference and relate to others. This also releases reference from having a basis in reality and perception, freeing it to a purely symbolic level and allowing the contemplation of symbols referring to imaginary things like future events. The finite set of symbols greatly reduces the mental resources necessary to add new information and integrate with older knowledge (Deacon, 1997).

Deacon's hierarchy is embedded in C.S. Peirce's theory of signs and the Semiotic (cf Deacon, 1997; 2003). While a full review of Peirce's Semiotic theory is beyond the scope of this study, a review of the basic components of the theory will help to demonstrate how interpretation has a structure related to different logical levels. Differences in logical type between iconic, indexical, and symbolic "modes of representation can be understood in terms of *levels* of interpretation" (Deacon, 1997: 73). Peirce envisioned a fundamental set of Universal Categories (UCs) for experiencing and knowing about the world that are "necessary and sufficient to account for all of human experience... designated firstness, secondness, and thirdness" (Everaert-Desmedt: 2011). These logical levels exist in relation to subjective experience in relation to other signs, and through construction and exchange of signs, humans manifest culture, of which Peirce's semiotic provides the micro-level description of (Wiley, 2006a).

Firstness is a quality of being encapsulated by wholeness or oneness, in which there are no boundaries, no parts, no cause and effect, no sense of time. Firstness is related to sensation, feeling, the body and emotion. Firstness can be thought of a "quality experienced, not conceptualized" (Short, 2007), a simple subjective experiencing in the moment of the feeling of a quality which can be reduced to nothing else. Secondness is the category of individuality in relation

with something else, where cause and effect produce a difference in time between past and now. Secondness is related to practical experience. Thirdness brings firstness and secondness into relation through rules and laws in the effort of prediction. Thirdness is characterized as intellectual thought.

The Universal Categories of firstness, secondness, and thirdness are each components of the Semiotic triad, of which Peirce's terms of Representamen, Object and Interpretant are held in relation to each other to describe the semiotic process. "Peirce's view of semiosis integrates all the components of semiotics: Pragmatics (the domain of the interpretant) is inseparable from semantics (the domain of the object) and from syntax (the domain of the representamen)" (Everaert-Desmedt, 2011: 2.3).

### Peirce's 9-part Sign Taxonomy

	( Representamen ) Sign Vehicle Itself	( Object ) Sign to Object	( Interpretant ) Sign to Interpretant	Category Type
1	Qualsign	Icon	Rheme	Quality
2	Sinsign	Index	Dicent	Association
3	Legisign	Symbol	Argument	Proposition
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	

**Fig. 15.1** - Peirce's 9-part Sign Taxonomy - *Sources*: Deacon (2012: 16, Fig. 2.2); Everaert-Desmedt (2011)

In Peirce's taxonomy (**Fig. 15.1**), the semiotic is envisioned as a triadic relationship between a Representamen, an Object, and an Interpretant (ROI), of which "each category contains three levels of relationship" (Deacon, 2012: 16). The Representamen is something which represents an Object and which requires interpretation via the Interpretant. "Upon being interpreted, the representamen has the ability to trigger an interpretant, which in turn becomes a representamen by triggering another interpretant referring to the same object as the first representamen, and thereby allowing the first one to refer to the object. And so on, *ad infinitum*" (Everaert-Desmedt, 2011: 3). This process continues until a final interpretant is reached by settling on a certain signification of the sign in a particular familiar context, through which consensus of interpretation of a sign enables social communication. This final interpretant is characterized by the term "**habit**," be it a habit of convention enforced by social or cultural rules, or a habit of thought

developed through previous experience.

To complicate things, each of the three general categories of the triad can themselves be distinguished by trichotomies relating to firstness, secondness, and thirdness. The sign taxonomy in **Fig. 15.1** shows the three levels (columns) of Representamen, Object, and Interpretant (ROI) each having forms relating to firstness, secondness, or thirdness. Thus Representamen can manifest as a Qualsign (quality), Sinsign (thing or event), or Legisign (conventional sign). Objects are what the sign represents: Icon, Index and Symbol. Interpretants can be interpreted at the level of firstness (Rhematic), secondness (Dicent), or thirdness (Argument). The triadic is then composed of a combination of Representamen, Object, and Interpretant by adhering to one rule: “no property from a column to the right is at a higher level than that to its left. Thus there can be “a rhematic indexical sinsign (2 2 1) or a decent symbolic legisign (3 3 2) but not a dicent indexical qualsign (1 2 2) or a dicent iconic legisign (3 1 2)” (Deacon, 2012a: 16). This taxonomy of sign types yields a combinatorial system of logical typing, producing ten mechanisms of signification (Everaert-Desmedt, 2011).

**Distribution of Categories in Semiosis**

	ROI	Classes of Sign Triad Type	Phenomena
1	1 1 1	rhematic iconic qualisign	a general vague of hurt
2	2 1 1	rhematic iconic sinsign	a model
3	2 2 1	rhematic indexical sinsign	an involuntary shout
4	2 2 2	dicent indexical sinsign	a weathervane (pointing in direction of the wind)
5	3 1 1	rhematic iconic legisign	onomatopoeia: "cock-a-doodle-doo"
6	3 2 1	rhematic indexical legisign	an indexical word: "that"
7	3 2 2	dicent indexical legisign	a red light in context
8	3 3 1	rhematic symbolic legisign	a common noun: "apple"
9	3 3 2	dicent symbolic legisign	a proposition: "it's cold in here"
10	3 3 3	argument symbolic legisign	<b>abduction:</b> "It's cold in here" Interpreted as a request to close the window. <b>induction:</b> "Where there is smoke there is fire" <b>deduction:</b> the red light of the traffic code in the abstract.

**Fig. 15.2** - Distribution of Categories in Semiosis - *Source:* Everaert-Desmedt (2011)

The distribution of categories of Semiosis in **Fig. 15.2** describe a hierarchic stack sign triads composed of firstness, secondness, and thirdness. Each level of the stack represents a different

logical type which can be defined by a particular set of relations between firstness, secondness, and thirdness. A stimuli (eg a feeling, a sound, any object of interest) may have some quality (a firstness) which may be related to a previously encountered quality from memory (a secondness) that brings to mind a propositional statement about them (a thirdness), which in turn brings to mind other experiences that were similar, and so on. The thinking process can speed through a series of connections evoked by some stimuli, traversing up and down the list of categories, although most verbal content are various categories of legisigns. So, Semiosis seems to work downward in **Fig. 15.2** towards some psychological resolution in the form of a propositional statement that satisfies the semiotic chain.

Deacon explains these categories by stressing the hierarchic process of differentiation of “ever more complex forms of reference” in which a sign vehicle is recognized and initiates a cognitive process of interpretation to extract meaning, which may include many cycles of interpreting a sign vehicle with an object, which itself becomes the new sign vehicle. The sign vehicle itself does not contain the semiotic attributes except through interpretation in the mind of the one doing the interpreting (Deacon, 2012). The process of interpretation is a construction process, and the hierarchic nature of icon -> index -> symbol is not a property of the sign but part of the construction process of semiosis. A sign vehicle (representamen) may be interpreted as an icon, which is then compared in memory to other icons and may be then interpreted indexically. The indexical sign vehicle may then be compared to other indices in memory to be interpreted symbolically, which through this recurring semiotic process extracts symbolic meaning not inherent to the sign vehicle, but only through the process of interpretation (Deacon, 2012).

Deacon (2012: 13-14) provides an example of letter having a wax seal that signifies the sender's identity. The wax seal must first be recognized for its iconicity, but contains no meaning unless one already has the cultural knowledge of the use of a signet ring impressed into the wax with its identifying mark, which recasts it as an indexical reference. The indexical sign vehicle of the wax seal to the signet ring may then be interpreted according to the social convention that holders of such rings are indicative of social status or authority, thus inferring the symbolic reference to the sender, their status, and perhaps the importance of the note. The wax seal itself may be interpreted iconically, indexically, or symbolically, but doesn't itself contain those attributes, which are instead are hierarchically related through the process of interpreting the sign to higher orders of meaning.

Thus, the categories in **Fig. 15.1** are dynamic in the sense of being cued by a stimuli sign vehicle that may be interpreted in a number of ways, yielding a new stimuli in the form of a new sign vehicle (from memory), in a process to “understand.”

The semiotic process appears to be analogous to the Conceptualized Act Model's Conceptualizations (Barrett, 2017), the process by which previously encountered representations stored in memory are compared to Core Affect to contextualize the situation and give meaning to feeling. The collection of concepts associated with a situated conceptualization contains aspects of the situation held in memory at every level of the Semiotic Category distribution, representing different aspects of the situation encoded in memory which can be used to interpret the meaning of the current feeling state. The concepts themselves are semiotic representations symbolically related to all other content. Conceptualization relies on categorization matching Core Affect's Evaluation and Activation affective dimensions to the Evaluation of a stimuli's Potency & Activation, for which all semantic terms have some culturally coordinated location in EPA space.

Peirce's semiotic comprises the core of a process from which human volitional and moral capacities arise through inner speech (Wiley, 2006b). The classical American Pragmatists William James, John Dewey, and George Herbert Mead in addition to Peirce “re-discovered” inner speech (Wiley, 2006b). Peirce envisioned inner speech composed by a dialogue between a subjective “I” brought into relation with an objective “you.” A generation later, Mead envisioned the inner speech dialogue between the subjective “I” and the objective “me.” Wiley's *Semiotic Self* (1995) provides a synthesis of Peirce's “sparse comments” on the I-you and Mead's I-me, creating an I-you-me triologue that manifests as the Semiotic process. The I-you-me triologue is the conscious awareness of the semiotic process engaged in managing the overall global Self-Concept (Wiley, 1995). Inner speech allows for modeling choice, which may or may not be chosen internally, but which also must be acted upon externally, making inner speech a causal factor of behavior (Wiley, 2006b).

Vygotsky's (1986) Private Speech theory provides a high level answer to how the internal semiotic self emerges. Vygotsky's theory challenged Piaget's studies of early child development, which negatively characterized children's egocentric speech (self-talk) as a deficit of perspective taking and reciprocity in communication before the development of the social externalized social



behavior (Vygotsky, 1986). Alternatively, Vygotsky's careful study of the emergence and gradual disappearance of egocentric speech characterized it as externalized thought which eventually becomes internalized thought. Children often engage in self-talk when consumed in a task or play that poses some difficulty, providing guidance and direction towards accomplishing a goal. Self-talk can be seen as self-guidance towards integrating social role behavior learned via speech with the actual implementation of action. "Egocentric speech emerges when the child transfers social, collaborative forms of behavior to the sphere of inner-personal psychic functions" (Vygotsky, 1986: 35). Vygotsky's insight was that the social role had already been learned through speech and gradually internalized, but that behavioral externalization was guided by objectively observable self-talk, giving a glimpse into the role of internal semiotic thought process at the time of speech leading to action.

Wiley's theory posits the internal conversation of thought is a semiotic triadic between I (subjective self-awareness) with the reflexive Me (objective static self-representation) engaged with You (changing self). The three person perspectives of language—subject, object and predicate—also signify temporality representing present, past and future. Pierce and Mead proposed dialogic models of I-you and I-me, respectively, which differed in temporal logic, with the I-you directing talk towards the future self while the I-me directs towards the self of the immediate past (Wiley, 2006b). Wiley's synthesis provides a reconceptualization of the I-you-me conversation as a Semiotic process containing a firstness, secondness, and thirdness of Self. Such a synthesis resolves the difference between subject-object reflexivity, on which Mead and Peirce differed.

The I is the spontaneous, creative innovator that can "construct cognitive reality, to redefine situations" in the present (Wiley, 1995: 51). As the agent of action, the I has the freedom of choice and ability to cognitively choose definitions. The act of choice and moment of decision is the cognitive blind spot "by virtue of the structure of reflexivity," as the I is "blind to itself" because the I is always stuck in the experiential subjective present, so I cannot be the object of its own thought. The I's rule breaking is mired in ignorance and error, yet has cognitive freedom "of redefining situations and dissent from old definitions" (Wiley, 1995: 48).

However, that moment of decision crystalizes the me in the past, and those decisions are "repeated and hardened into relatively settle orientations and habit" (Wiley, 1995: 47). Mead's me then

provides an objective view of the Self as it was a moment ago (or longer), which when observed objectively by I in the present, can reveal an outside view of the I and a “quasi-penetration of the blind spot...via a position of otherness” (Wiley, 1995: 46). This provides a second order of logical information that acts as self-awareness, although it is only a snap-shot of the self at a time captured by the I’s psychological present. The I-me relation is often a second order thought about thought, such as thinking through a past event, where the me of the past occupies a second order I, which allows examination of the me from angles which the experiential I is blind. The objective me is associated with normative morality in which it is judged by others externally (reward/punishment) and from within emotionally (guilt).

By contrast, Peirce’s you is the “second” person in the conversation grammatically, either as the projection of the Self in the future or a generalized other you, both non-reflexive objects to the I. Whereas the me is stuck in the same first person as the I, the you can function in both the nominative or accusative cases, simultaneously both subjective and objective (Wiley, 1995). However, when you is the object to I, it is also a subject as another speaker, facing the I. Thus, the I-you relationship lacks the blind spot of the I-me, in that the you can see the I better than the I can see itself (Wiley, 1995). The you can be projected onto with hypothetical situations and examined by the I, allowing for an intra- and interpersonal you in the future permitting “internal reflexivity” and serving as a “cognitive looking glass” (Wiley, 1995: 51). This internal relation provides an internal model of the external interpersonal experience, from which a concrete you can be engaged and also provides information that informs the I about itself (Wiley, 1995).

*“(In an actual interpersonal) “we experience”...the I is not a blindspot for the other person, even though it is blind to itself. In a sense you get closer to your own I through the other person than you do in your own self-awareness. You see yourself in the other by way of two acts: that person’s perception of you and your perception of that person, neither of which entails the blindspot of reflexivity. The I-you relationship has some of the same features as the “we experience.” Wiley (1995: 50)*

This study posits that Wiley’s Semiotic Self structure can help to organize the integration of various components from other theories involved in the various aspects of Self and the Self process in relation to temporality and the representational. Peirce’s categories (firstness, secondness and

thirdness) provide the basic categories in which the symbolic self operates and the basic logic for the three columns in **Fig. 15.3**.

**Semiotic Self Structure**

Label	Present	Past	Future	Sources
Identity	I	Me / It	You / Thou	Wiley - Peirce/Mead
Triadic	firstness	secondness	thirdness	Peirce
Semiotic	Representamen	Object	Interpretant	Everaert-Desmedt
Perspective	1 <sup>st</sup> Person	2 <sup>nd</sup> Person	3 <sup>rd</sup> Person	Wiley, Habermas
Self	Proto	Core	Autobiographical	Damasio
Self-Representation	non-conceptual	conceptual	propositional	Schlicht <i>et al</i>
Emotion Category	structural	consequent	anticipatory	Kemper
Knowledge Realm	subjective	normative	objective	Habermas

**Fig. 15.3** - Semiotic Self Structure - *Sources*: compiled from

Habermas (1979); Wiley (1995); Schlicht *et al.* (2009); Damasio (2010); Everaert-Desmedt (2011)

The Present semiotic self structure emerges from the subjective experience of self. The firstness Subjective realm is the default experiential and knowledge perspective involving sensation and emotion in the now. Damasio (2010) characterizes a Protoself as the primordial part of the brain (upper brainstem) that lays the foundation of consciousness through its representation of the body, which allows for experiencing the spontaneous feeling of the living body through primary affects and constructed “images” of the stable self. Kemper’s (1978) structural emotions are those which arise from the stable structure of a power-status relationship by one’s current power and status, producing elemental emotion categories analogous to primordial feelings which are usually stable and define the emotional self.

The Past semiotic self structure emerges from the interactive experience of which past performances provide consequent concepts of self. The secondness Normative state of being is the Self in relation with some(thing/one) else relating cause and effect to generate a discontinuity in the sense of time and the feeling of the past. This corresponds to Damasio’s Core-self, defined by part of the brain which monitors changes to the protoself during interaction with an object, in which their relationship is constructed in a sequence of images, some of which are feelings, producing the sense of time and of the past (Damasio, 2010). Kemper’s consequent emotions are those having arisen as the result of interaction, whether real or imagined, which change the relationship between the self and an interactant, accompanied by emotion categories that are consequent of the interaction creating a sense of cause and effect (Kemper, 1978).

The Future semiotic self structure emerges from the objective, experience of self influenced by a narrative interpretation of present and past experiences towards a goal state. The thirdness Objective realm represents a detached Self produced from the relation of the stable self of now and the self actualized through interaction with an object, representing a propositional logic or interpretation of Self used hypothetically or predictively. Damasio's Autobiographical self is defined by multiple instances of the Core-self narrative, either from the experienced past or anticipated future, linked to a coherent large-scale pattern. Kemper's anticipated emotions are those "positive or negative feeling tones" (Kemper, 1978) related to past emotional experience or future success/failure given the current setting, relating the consequent with the structural in anticipation of a future feeling state.

The Semiotic process is involved in building meaning between the interrelation of these three categories, not simply linguistically, but representationally (Wiley, 1995). The Self, then, is a constructed representation of these three different perspectives, which are embodied cognitive processes that become articulated by the acquisition of language and the grammatical speaker perspectives, which are internalized through inner speech as thought allowing for internal self-representations. In a seeming fit with **Fig. 15.3**, Schlicht and colleagues (2009) distinguish between three distinct levels of mental representations of the Self—the non-conceptual, conceptual, and propositional—which are "a special subclass of mental representations...underlying consciousness" (Schlicht *et al.*, 2009: 697). These levels of self-representation seem to resonate with Peirce's Universal Categories (UCs) of firstness, secondness and thirdness categories.

Traditional philosophical conceptions of Self-representation are focused upon a propositional self, rather than conceptual or non-conceptual representations, emanating from social-narrative practices defining a propositional Self (Schlicht *et al.*, 2009), matching Damasio's autobiographic self and a sense of thirdness. On the other hand, the non-conceptual self-representation is a non-attributive representation manifesting from subjective experience lacking an object, where the self is implicitly felt (Schlicht *et al.*, 2009). Non-conceptual representations form the basis of self-consciousness, yet are paired with Damasio's (2010) Core Self (Schlicht *et al.*, 2009), which conflicts with Damasio's Core Self that defines changes to the protoself through a series of images, definitely involving an object (Damasio, 2010). Instead, Damasio's Core Self pairs better with

conceptual representations relating to the Self as object and a sense of secondness, while the Proto Self of direct subjective feeling more closely matches non-conceptual representation and a sense of firstness.

Conceptual representations are tied to direct perceptions of self-attributions, which can be prone to misidentification and invalidated by others' independent perception, making them subject to some cultural influence (Schlicht *et al.*, 2009). Whereas the non-conceptual representation (firstness) is posited to be culturally invariant, the conceptual (secondness) may be shaped by culture but only in the sense of culturally defined rules for perception-based concepts (Schlicht *et al.*, 2009).

However, propositional self-representations (thirdness) very much *are* subject to cultural variation, shaped by culturally-defined processes which affect individual human cognition not simply in content, but using distinct cognitive mechanisms (Schlicht *et al.*, 2009). These cultural influences come in two distinct variants corresponding to **individualist** and **collectivist** (IC) cultural orientations which influence the self-construal processes (Schlicht *et al.*, 2009).

Self-construal is essentially the degree to which self-definition is grounded in independence or interdependence in relation to others. **Independent** self-construal is thought to be shaped by Individualist cultures placing value upon individual, autonomous achievement and personal uniqueness, which influences people to see themselves as separate from others (Schlicht *et al.*, 2009). Individualist orientated cultures focus the self-construal process upon individual self-representations directed by unique characteristics of "internal features like traits, attitudes, and abilities" (Schlicht *et al.*, 2009: 691). **Interdependent** self-construal, on the other hand, is thought to be shaped by Collectivist cultures placing value upon "elements of the social world, such as relationships to others, contexts for behaviors, group memberships, and social roles" which direct behavior towards social norms, shared beliefs, and the desire to "fit in" (Schlicht *et al.*, 2009: 691). Interdependent self-representation must then take the social context into account, which represents **context-dependent** processing, while independent self-representation reflects **context-independent** processing (Schlicht *et al.*, 2009). Context-independent and context-dependent processing represent two different "procedural modes of thinking" (Kühnen *et al.*, 2001: 397), in that "people will generally tend to process stimuli either unaffected by the context in which they appear (context-independent processing mode) or cognizant of the context (context-dependent mode)" (Schlicht *et al.*, 2009: 693).

Either type of self-construal “is both a set of autobiographic self-representations, and a cognitive structure associated with cognitive procedures that organize access to and retrieval of the represented contents” (Schlicht *et al.*, 2009: 692). Independent self-representation involves “aggregating and integrating information about the self across situations while ignoring situational variance in one’s own thoughts, feelings, and behaviors” so that self-representation is trait-focused (Schlicht *et al.*, 2009: 693). Interdependent self-representation involves relational information related to the present situational context rather than an aggregated dispositional focus. However, the conceptual representations of the two forms of self-representation use different “basic cognitive processes for the perception and interpretation of stimuli” (Schlicht *et al.*, 2009: 692-3).

Thus, these two forms of self-construal are implemented by two different “procedural modes of thinking” using context or not, as well as a “semantic application system” in which semantic knowledge itself differs (Kühnen *et al.*, 2001: 311), both of which are foundations of the semantic-procedural interface (SPI) model (Hannover & Kühnen, 2002), which centers around the self:

*“a person's view of the self may be the key variable in understanding how culture influences individual experience. In addition, we believe that our results profoundly challenge cross-cultural research. Whenever observed differences between individualist and collectivist culture members have been explained by the different natures of the self, the two mechanisms by which independent and interdependent self-construals influence cognition and behavior, as specified in the SPI model and disentangled in our studies, have been confounded.” Kühnen, Hannover & Schubert (2001: 407)*

The semantic-procedural interface (SPI) model of self-construal provides a mechanism through which culture influences human cognition (Kühnen *et al.*, 2009), both in content and process through Individualism and Collectivism (Oyserman & Lee, 2008). Meta analysis of the cultural priming of Individualism and Collectivism show that “effect sizes are moderate-to-large in relationality and cognition, and small for self-concept and values....(and) suggests that at least two axes of culture, individualism and collectivism, demonstrate impressively systematic psychological implications” (Oyserman & Lee, 2008: 312). This identifies Individualism and Collectivism (IC) (Triandis & Gelfand, 1998) as a dimensional axis used to orient social cognition and behavior,

which corresponds with the vertical axis of the Social Self Model.

The self-representation affected by culture is the propositional, relying on semantic meaning and symbolic reference. However, conceptual and non-conceptual forms of self-representation are “representations” which also can be symbolic references to some contextual aspect of the environment or situation. The semiotic categories are exactly that, categories of higher order logical types which refer to lower logical types such as perceptions.

Edelman (1987) characterizes all perception as categorization, which infants display from the very earliest of ages in the stored vowel categorizations which serve as vowel prototypes for the rest of life (Kuhl & Meltzoff, 1997). However, Categorical Perception (CP) causes perception of physical continua to be perceived in non-linear chunks, a process which does not require lexical categories (Sauter *et al.*, 2011). This type of categorization differs from the categorization of Situated Conceptualizations, where the chunked content are termed concepts which “represent diverse categories of settings, agents, objects, actions, mental states, properties, relations” and “enable categorization, making it possible to identify the objects, agents, actions, and so on currently present in a situation” (Barsalou, 2017: 12). This categorization is made possible by a symbolic referential system of higher-order relationships detached from physical stimuli able to model all the various components of any and every Social Frame (Goffman, 1974).

While enabled by language, the symbolic referential system’s lexical component is a mere subset in all the various representations of meaning possible. The combinatoric channels of symbolic meaning span the spectrum from the phenomenological subjective qualities of experience such as feelings or qualia (firstness); to the intersubjective medium of non-verbal exchange of gestures, intonation, etc that give context to communication (secondness); to the “habits of feeling, action, and thought” that extend far beyond the “narrowly defined concepts of symbol and conventionality” (thirdness) (Mittelberg, 2019: 195). Examples of any of these can be part and parcel of information adding to the richness of the Social frame, and used to glean meaning from social actions, which contributes to the construction of symbolic meaning of ourselves and others.

Thus, cultural influences which stress Individualism prime independent self-construal, which may make context-independent subjective feelings more heavily relevant to self-representations, while

Collectivism primes context-dependent self-construal, which may make context-dependent conventional feelings more relevant to self-representation, each of which involve a different cognitive process of thinking (Kühnen *et al.*, 2001: 397). These then may be the external, higher level influences which guide social-perception towards an internalized subjective focus or towards an externalized objective focus, from which cognitive process use either trait-focused biases or situation-focused biases.

The context of different levels flavor the interpretation of stimuli differently, at both micro levels (psychological & interpersonal) and macro levels (social & cultural). The self making process occurs at the psychological level via the internal I-me-you dialogue, representing the conscious tracker of the process, which occurs internally in each individual and provides the most basic universal uniting all humans (Wiley, 1995). Self making and meaning making also occurs in relation to others, at the interpersonal level where we enact roles which reinforce self-identities as well as shared identities with others. Self making can also be viewed from the structural perspective, where social structure offers or restricts opportunities for self making. Cultural levels are those shared meanings of selves toward which we use as standards, which are largely embedded in semantic meanings. All of these levels have symbolic realizations of the semiotic structure, both experientially in the construction of self and externally in the decipherment and study of human systems.

Wiley's Semiotic Self theory similarly posits the Self is interpreted differently from different perspectives, where rather than a purely psychological phenomenon, the Self is reduced to "some other kind of reality" at different ontological levels. Different knowledge pursuits within the Social Sciences, Humanities, and Biological Sciences naturally sort themselves into particular levels, which are recognized generally as being at the Cultural, Social, Interpersonal, Psychological, Biological levels, and present different "kinds" of social reality focused at different levels spanning from the physical to higher symbolic levels (Wiley, 1988). While a theory of levels dates back to Plato and Aristotle, it has never been formalized and would require far more detailed analysis to demarcate levels (cf Wiley, 1988). However, Wiley offers a simple six level model summarized by **Fig. 15.4** below.



Semiotic Self - Ontological Levels											
Reduction		Level	Semiotic Structure				Point of View	Reflexivity	Solidarity	Materiality	Reduction
			Sign	Interpretant	Structure	Content					
<div>Upward abstraction</div>	<div><b>Idealism:</b><ul style="list-style-type: none"><li>• omits material conditions</li><li>• explanation solely on Meaning</li><li>• drops genus maintains differentia</li><li>• lacks sign</li><li>• corporate not individual</li></ul><div>~ Structuralism</div><div>~ Interactionism</div></div>	Cultural	Sign	Interpretant	Meaning	Concrete referent	Extra-Subjective	Virtual	Ritual Symbols	Virtual As centers	<div><b>Positivism::</b><ul style="list-style-type: none"><li>• omits normative properties</li><li>• explanation solely on Cause</li><li>• maintains genus drops differentia</li><li>• lacks interpretant</li><li>• lacks personhood</li></ul><div>~ Neurophysiology</div><div>~ Artificial Intelligence</div></div>
		Social	Collective Agent	Collective Patient	Organization	Concrete referent	Generically Subjective	Collective Consciousness	Social Solidarity	Time-space Elasticity	
		Interpersonal	Ego	Alter	We	Concrete referent	Inter-Subjective	Role-taking	Interactive Solidarity	Time-space Indexicality	
		Psychological	I	You	Me	Concrete referent	Intra-Subjective	Internal Conversation	Inner Solidarity	Embodiment In Organism	
		Biological									
		Physico-Chemical									

**Fig. 15.4** - Ontological Symbolic Levels & the Semiotic Self -

Source: Wiley (1995: 158-159, Table 7.1 & 7.2)

At each level, different knowledge perspectives cast the Self, for example in the case of the Interpersonal, in intersubjective relation to a particular other Self (Alter). From that perspective, the Self is an actor seen from the Self's perspective as Ego, while Alter too has its own self and together their joint attentional interaction produces a higher ordered conception of self in which both share in "We." The conception of the self at the Interpersonal level represents an expansion of Subjectivity that is shared, and that combined shared sense of "We" encompasses each actors' Self role while also providing a second-order shared Self. The structure of Ego - Alter - We at that level has a Semiotic structure, and the Self engages in intersubjective role taking. Similarly, at other perspective levels, such as the Social third person observer perspective, or the Cultural third person interactant perspective, the Self is reconciled in more generalized terms, as in the collective Roles that produce Social Structure, or in the symbolic ways in which Cultures interpret the Self.

Wiley argues that scientific endeavors to explain reality within the Social Sciences, Humanities and Biology reduce knowledge from other ontological levels, and in the process, negate one of the semiotic perspectives, leaving that knowledge perspective with an incomplete conception of reality. Reductions occur not only upward, but also downward, such as when Psychological or Social phenomena are reduced to simply a Biological or Neurological explanations. While the Sign, Interpretant, and Object of the Semiotic are all necessary for a complete picture of human reality, the two reductions (*Up or Down*) lose one of these elements in their reduction of one level into another, reducing the triad into a dyad, losing either the sign or the interpretant, while Cartesianism loses the

object (Wiley, 1995). These two reductions can be generally identified as an Idealism abstracting upward or Positivism reducing downward, which are sets of “philosophical premises that operate like leaven in public life” (Wiley, 1995: 16).

The upward reduction has been resurgent in the past half century, as “a wave from structuralism to post-structuralism to postmodernism to deconstruction...took over the literary criticism, language studies, and the humanities” and could be “interactional (e.g. Wittgenstein), structural (e.g. Foucault and Althusser), cultural (e.g. Derrida)” (Wiley 1995: 195-196). Upward reductions, in which the Self is rolled up into a higher level categorization alters the reality at that level as too generalized or abstracted, missing perspective of the Self as an individual. Thus, endeavors such as Post-Structuralist or Post-Modernist analysis to explain reality fail to take into account different aspects of the Semiotic that leave their analysis lacking some component of the Self. On the other hand, downward reductions that reduce human experience to lower level Biologisms or scientific models (eg, AI or Empiricism) suffer from the lack of the Human Interpretant (Wiley, 1995). Downward reductions reduce “reality” to other physicalisms which suffer from an incomplete semiotic by negating various experiential dimensions including first-person perspectives, abstract meaning, intentionality, or behavioral autonomy that create human reality (Wiley, 1995).

Wiley characterizes his Semiotic theory as manifesting during the emergence of language in each individual, where the inner trialogue arises out of speech, as merged through the classical pragmatist theories of Mead and Peirce which Wiley sought to integrate. However, it must be noted that while speech concerns the most prevalent modality of language, language needn't necessarily be vocalized as speech to be considered communication. Sign-language represents fully articulated communication, and particularly enlightening are people such as Hellen Keller and others who have become fully articulated communicators and thinkers despite both deafness and blindness. Thus, the inner-trialogue cannot be characterized simply as inner speech, but inner symbolic representation in some internalized form which mirrors the dominant modality of communication for each individual. Importantly, it is subjectively experienced, although its internalization is of a culturally shared form in coordination with all others.

While not explicit in Wiley's theory, the integration of Cultural, Social, Interpersonal, and Psychological levels occurs via the Semiotic process, as information embodied through cultural

transmission, social structural relations, interpersonal engagement, and subjective experiential thought mix in which the ever running “trialogue” between the I-You-Me integrate with the overall global Self-concepts.

It is the hypothesis of this study that the Semiotic I-You-Me conversation represents the conscious perception of the Identity Control Process (ICP) (Burke & Stets, 2009) that integrates symbolic representations across the four symbolic levels of **Fig. 15.4**. The categorical perception from situational (Social), environmental stimuli produce meaning (Cultural), comparing it to like meanings from memory in relation to some standard (Social). A differential is computed (Neurological) yielding some a motivational, behavioral action response (Interpersonal) to subtly adjust the enactment of an identity (Psychological), which produces affective signals as stimuli (Biological / Physio-chemical) for each interactant to interpret (Psychological / Interpersonal) in the next iteration of the Identity Control Process. Thus, an overall conception of reality must contain all these perspectives, both observationally and experientially.

The identification of cultural selves, social selves, interpersonal selves, psychological selves or even neurological selves as representations occurring at different perspectival levels also require the integration of firstness, secondness, and thirdness. This study posits the experience of self-making from each of these perspectival levels, too, must overcome a reduction at each level, as the process of meaning making at each level requires each category of the triad. While the semiotic process is functionally active in meaning making as a full triad across all levels, the triad itself is limited at each level by the poverty of one perspective category, in a yet unnamed medium of meaning making. As this study will eventually posit, the three categories of firstness, secondness, and thirdness must share a common medium in which they may be integrated, one constrained in neurophysiological reality but which can help to explain integration of meaning and self-making at different levels.

Quinn & Matthews (2016) give a preview of such a medium in their conception of the process in which individuals adopt cultural selves—types of cultural schemas shared with others across a culture. Cultural selves become part of what gives meaning to one’s autobiographical self embedded in memory, experience, and cultural meanings. Yet, cultural selves are only adopted when those cultural schemas are accompanied by “emotionally arousing, synaptic-plasticity enhancing experiences,” oftentimes extending way back into early childhood. Echoing Edelman’s (1985)

conception of the learned categorical representations, arousing emotional subjective experience helps to fuse such the semantic meaning of cultural concepts as a central self-meaning from the wide variety of experienced self-concepts experienced over life. As will be shown by this study, in synchrony with Integral Theory itself, each of these perspectival levels corresponds to a particular symbolic relationship of the external or internal experience of the individual with the collective. The medium in which meaning from each these perspectives share is affect, and it is largely subconscious.

## CHAPTER SIXTEEN

### Emotional Hierarchy & Blending

*“Emotion processes are innate, adaptive, complex integrations of action, autonomic preparation for action, and expressive signaling of the impending action sequence.” Laird (2007: 113)*

Self-Perception Theory focuses on internal, subconscious emotion processes produced by biophysical feedback which subconsciously influence cognition and behavior. However, emotions are not simply subjective experiences, but arise from the structural aspects of social interaction and are interpreted according to cultural rules. Their common cultural interpretations are tied to defined social structural relations (expectations and sanctions for behavior), making them function like an Interpersonal Control System modulating and controlling behavior at the group level based upon the integration of external and internal perception.

This study posits that structural, social relational dimensions are characterized by evoked emotion categories which function like information in control systems. This rather abstract conception of emotions can best be observed by social control process relating to emotion: Pride, Shame & Conformity.

Evidence from cultural anthropology provides a deeper explanation of Power & Status interactions generating emotions and contributing to the concepts of blended and second order emotions. Evolutionary Anthropologist Daniel Fessler’s study of the Bengkulu culture, a small ethnic group on the island of Sumatra speaking Malay, explains a society which has an unusual social dynamic involving two opposing emotions whose analogue in most western cultures remain hidden or taboo. Bengkulu society values and orients around two prevalent emotions: a Shame-like (**malu**) and its opposite, a Pride-like (**bangga**), although neither are precisely the same concept as in English (Fessler, 1999). Bengkulu society’s outward focus on Shame-like and Pride-like emotions makes for a rare glimpse into the process underlying social structure, for these two emotions regulate Bengkulu

group behavior and provide a model for understanding the evolutionary origins of symbolic reference and the development of theory of mind.

Much of Bengkulu social life orients around entrenched group customs in which all participate to avoid *malu*. Such customs lead the Bengkulu to engage in normative prosocial behaviors such as participating in religious rituals, visiting the sick, avoiding ostentation, etc. Experiences of *malu* occur, after the breaking of normative customs, from observed or imagined appraisals of others for the failure of following Bengkulu norms for behavior. When someone from Bengkulu culture violates a social norm and feels the negative appraisal from another, it causes the norm breaker to experience the feeling of *malu*, whereas the fulfillment of a social norm causes one to experience *bangga*.

A second logic follows a set of rules reflecting rank dominance, where someone of superior social rank experiences feelings of *bangga* when rank is especially salient in interactions with a person of inferior rank, while the other experiences *malu*. Fessler provides an example of a young Bengkulu fisherman having to interact with one of his groups' esteemed leaders, towards whom he showed visible signs of deference in the lowering of his head and stammering during interaction. Upon interviewing the subject, it was explained that the young fisherman felt *malu* because of their difference in age and wealth, which could not be a from breaking a norm but instead because of a disparity between their social rank.

Fessler derived two separate logics used by the Bengkulu to produce both *malu* and *bangga*. The emotion logic governing the breaking of social norms follows a six-step logic, while the status comparison follows a simpler three-step logic. The latter, simpler logic represents a more ancient emotion generated by the simple difference between social rank, while the complex logic produces second order emotions emerging from the "reaction to the subjective experiences of other individuals" (Fessler, 1999).

## SHAME Paradigm Logical Conditions:

## Inferiority a Salient feature of Interaction

- 1 - Ego assesses an Other as significantly **more** important than Ego
- 2 - Ego must interact with the Other in a situation which the discrepancy between Ego and Other is salient to Ego
- 3 - Ego experiences *malu*, an aversive emotion

## Failure a Salient feature of Interaction

- 1 - Ego violates Norm
- 2 - Ego is aware of this Failure
- 3 - an Other is also aware of Ego's failure
- 4 - Ego is aware of Other's knowledge
- 5 - Other displays hostility and revulsion towards Ego
- or
- Ego assumes Other experiences this
- 6 - Ego experiences *malu*, an aversive emotion

## PRIDE Paradigm Logical Conditions:

## Superiority a Salient feature of Interaction

- 1 - Ego assesses an Other as significantly **less** important than Ego
- 2 - Ego must interact with the Other in a situation in which the discrepancy between Ego and the Other is salient for Ego
- 3 - Ego experiences *bangga*, a pleasurable emotion

## Success a Salient feature of Interaction

- 1 - Ego successfully fulfills a Norm
- 2 - Ego is aware of her success
- 3 - an Other is also aware of Ego's success
- 4 - Ego is aware of the Other's knowledge
- 5 - Other displays towards Ego either
  - i) a positive appraisal and affection
  - ii) a positive appraisal and hostility
- or
- Ego assumes that Other experiences (i) or (ii) towards Ego
- 6 - Ego experiences *bangga*, a pleasurable emotion

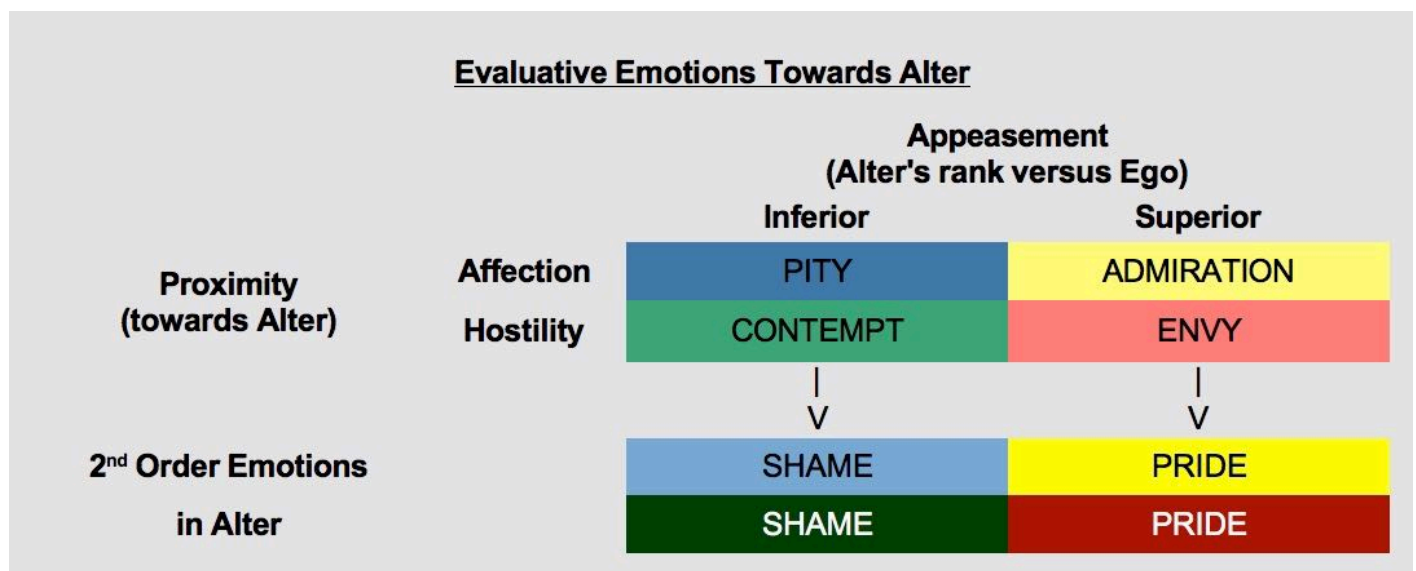
**Fig. 16.1** - Bengkulu Shame-like & Pride-like Dual Logics - *Source*: Fessler (1999)

**Fig. 16.1** outlines the two logics for both emotion types being generated in Ego. The simple three-step logic produces emotions from interactions between actors of greatly differing status. When their status is directly salient in the interaction, it causes an outwardly negative Shame-like emotion *malu* in the lower status individual and a positive Pride-like emotion *bangga* in the higher status individual. These can be considered first order emotions, directly reflecting a difference in status distribution. The more complex six-step logic involves the successful or unsuccessful fulfillment of a norm, recognizing the resulting emotion in Ego, Alter's reaction to & knowledge of the norm, then a second emotional reaction to Alter's knowledge of Ego's awareness of norm breaking.

The behavioral repertoires accompanying these two emotions are complete opposites, with head gesture, eye contact, body size, and social visibility displaying in opposing manners...*malu* avoids and shrinks while *bangga* shows and grows in size, both quite recognizable non-verbal cues across many cultures (Fessler, 1999: 13-15). The simpler three-step logic leads to displays which resemble Shame and Pride displays, which "serve principally to communicate assessments of relative superiority and inferiority" (Fessler, 1999: 17), representing more ancient forms of *malu* and *bangga*. The more complex six-step logics represent emotion displays which depend on knowing what the other is thinking, requiring greater cognitive load and **theory of mind**, which must be a more recent evolutionary adaptation (Fessler, 1999). Fessler argues the three-step logic emerging from the drive for dominance must have been favored by natural selection, as those high in dominance in rank-

ordered societies had more offspring. The six-step logic, on the other hand, represented a higher order logic allowing one to adjust their own behavior according to an awareness of another's impression of that behavior, which led to a social advantage. The two logics must then be related hierarchically and have emerged as separate evolutionary stages.

The emergence of the higher order logic can be explained by the simultaneous feeling of a self-directed and other-directed emotion to produce a blend of emotions arising out of two coupled dynamics in social interaction. The first dynamic relates to Appeasement or rank dominance, which is self focused and produces feelings of superiority or inferiority in Ego, as explained by the three-step logic. Another social dynamic exists in the proximity of individuals, which behavior can be characterized as affiliative or hostile, producing Approach or Avoidance social behaviors, which will later be shown not to be opposing ends of a single dynamic, but independent dynamics. Fessler's model hypothesizes all social interactions vary across Appeasement and Proximity, producing four distinct displays of other-evaluative, first order emotions. When another experiences being on the receiving end of these emotions, they become the source of second order emotions in Alter, following the six-step logic. These other-evaluative emotions are labeled Pity, Contempt, Admiration, and Envy (Fessler, 1999).



**Fig. 16.2** - First & Second Order Evaluative Emotions - *Source: Fessler (1999)*

The emotions in **Fig. 16.2** of Pity, Contempt, Admiration and Envy are examples of evaluative emotions of Alter based on Alter's rank versus Ego (Rank Dominance) and well as proximal feelings



towards Alter (Affiliative). According to Fessler, such emotions are produced by a combination of Ego's attitude towards Alter, plus a structural comparison with Alter. These two evaluations towards Alter produce a blend of emotions, with the former representing an elementary attribution (Affection or Hostility), while the latter representing a comparison of Alter's rank versus Ego (Inferior -Alter lacks what is desirable, or Superior - Alter has what is desirable) (Fessler, 1999: 23). Thus generally, feelings of Pity towards another combine an appraisal of affection towards an inferior other, while Admiration arises from affection towards a superior other. Similarly, feelings of Contempt combine an appraisal of hostility towards an inferior other, while Envy combines an appraisal of hostility towards a superior. When these evaluative emotions are viewed from the point of view of Alter, according to the six-step logic's rule #5, they produce second order *Malu* or *Bangga* emotions in reaction to Ego's evaluative emotions towards Alter. Fessler offers this model as one which could describe the emergence of second order emotions such as Shame and Pride, as well as the development of social norms (Fessler, 1999).

The first order other evaluative social emotion rules described by Fessler seem to align with the BIAS emotion types described by the Stereotype Content Model (SCM) (Cuddy *et al.*, 2008), where the mixture of oppositely valenced affects yields a blend of both positive and negative feelings.

According to the SCM, the logic of Pity includes the elementary affiliative warmth (+) (Joy) towards Alter plus a negative other-evaluative comparison towards Alter's behavior (-) (Sadness), yielding a blend of both positive and negative feelings toward Alter. Similarly, Envy describes coldness (-) (Hostility) plus a positive evaluation for norm fulfillment (+) (Happy), resulting in the mixed emotion envy. Fessler's logic for Pity and Envy closely match the ambivalent BIAS emotion types of the SCM. When two similarly valenced other-evaluative emotions are combined, their combined matching valences result in increased intensity (arousal) in the direction of valence, producing emotion categories of Admiration (+)(+) and Contempt (-)(-). This also agrees with Fessler's emotion logic.

Fessler characterizes the more complex six-step logic rules as having evolved out of the recognition of another's emotional reaction to one's own behavior, ultimately a step up in a Theory of Mind (ToM), which ultimately displaced the three-step logic in importance (Fessler, 1999). The display of a first order emotion gives information about the internal state of the emoter. However, one's own reaction to that emotion when recognized as the that person's evaluation of oneself, produces a second order

emotion in oneself, an emotional reaction to another's emotion. This yields important social knowledge of oneself through the eyes of Alter. These second order emotions of the Bengkulu, as in **Fig. 16.2**, manifest as Pride like and Shame like emotions. Being on the receiving end of first order emotions provide implicitly rewarding or punishing emotions, which motivate promotion or restriction of behavior. Second order emotions represent the impact of recognizing of Alter's view of Ego, providing another motivation to promote or restrict Ego's behavior, leading to a conformity towards social norms (Fessler, 1999).

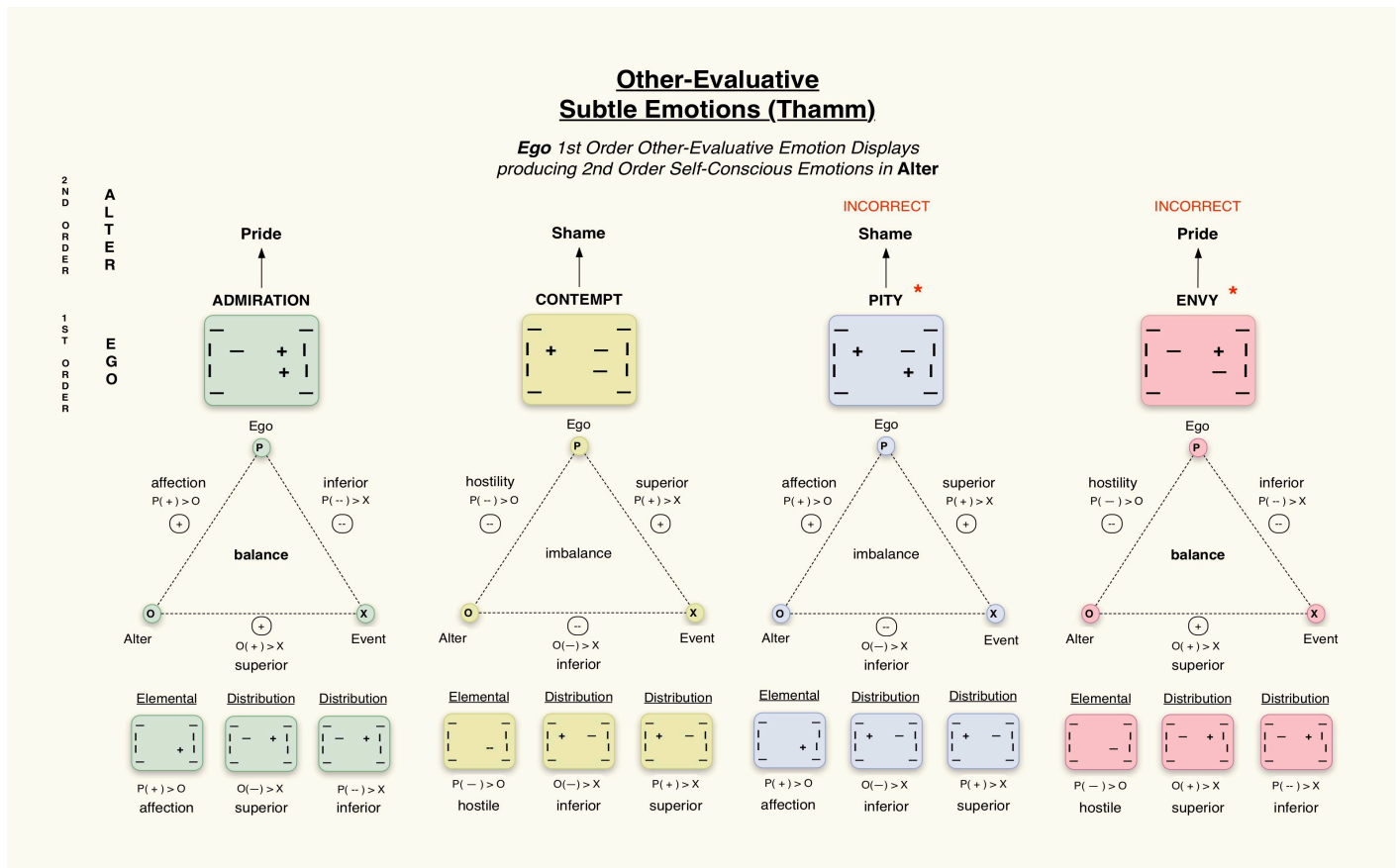
The emergence of first and second order emotions could be generalized to accord with Power & Status Theory of Emotion (PSToE). The first order social emotions seem to correspond to Subtle Emotion structures, which are blend of a triad of 2-category emotions (Thamm, 2004), although described by Thamm to operate via different feeling rules. The second order emotions might correspond to what Thamm (2004) termed Emotion Syndromes, which shape social interaction and social structure in general (Scheff, 1994) via the regulation of the Self through Self-Conscious emotions (Tracy & Robins, 2007), underlying moral judgment (cf Tangney *et al.*, 2007). Thus, Fessler's logic can be used to help integrate the SCM with Power and Status theory.

The Proximity or Approach/Avoidance dimension directly relates to Power and Status, where Status-accord represents a type of liking or affection, while Power represents hostility and the use of coercion, both relating to a type of social sanctioning (Kemper, 1978). It is also possible to generalize the Appeasement dimension from one of pure rank dominance, to one of Social superiority or inferiority resulting from meeting or not meeting expectations of social norms. However, comparisons of inferiority and superiority are distributional comparisons of meeting expectations. It becomes possible, then, to align the PSToE with Fessler's model for blending of other-evaluative first order emotions and their generation of second order self-evaluative emotions. They yields an important clue towards decoding the composite Subtle emotion categories, as well as the Emotion Syndromes, providing the beginnings of decoding the emotion taxonomy suggested by Thamm (2004).

Consider when Ego observes Alter socially, Ego's feelings towards Alter are flavored by their status relationship (the Appeasement dimension) as well as their general proximal relationship, one of being typified by either Affection or Hostility. If viewed with affection and desire to be proximate

towards Alter, then Alter's norm violation (a type of social inferiority compared to Ego) results in a show of Pity (1), which although containing a negative evaluation of Alter's norm failure, is sweetened by warmth. However, should Alter succeed in norm fulfillment where Ego doesn't (demonstrating the social superiority of Alter), it results in a show of Admiration from Ego (2). If Ego views Alter with hostility, it produces strongly negative feelings of Contempt (3) for norm violations, while norm fulfillment produces a less negatively valenced Envy (4). This dynamic highlights the production of both intensity and hedonic affect, which appear to be analogous to Core Affect's arousal and valence (Barrett & Russell, 1999) in blended emotions.

The other-evaluative emotions in **Fig. 16.2** translated to Thamm's E-S PSToE notation requires recognizing that they are produced from a blend of a first order emotion and a comparison structure to produce a Subtle emotion. These arise from appraisals of very particular structural aspects of the Power and Status relationship between Ego and Alter. Fessler spells out the emotion rules for combining first order emotions that produce a blend feelings about of Appeasement and Proximity (1999: 23). Translated to the language of PSToE, each of these other-evaluative emotions result from a combination of a distributional comparison of expectations plus an elemental evaluation of other (Like/Hostility) (cf Fessler, 1999: 22-24). The figure below (**Fig. 16.3**) shows the decipherment of other-evaluative Subtle emotions Admiration, Contempt, Envy, and Pity:



**Fig. 16.3** - First order Subtle Emotions in PSToE Notation -

*Sources: Fessler (1999), Thamm (2004, 2006)*

However, Fessler's rules for other-evaluative social emotions translated to the PSToE nomenclature uncovers an inconsistency, which requires review. These other-evaluative emotions are found in the Status or Power advantage/disadvantage conflict structures, which can be seen in **Fig. 16.3** above. According to Fessler's logic, the superiority/inferiority differential in the dyad corresponds generally to the distributional difference in meeting expectations, while the liking or dislike of Alter corresponds to the other sanction dimension. For the Status disadvantage/advantage forms (left two), those whom are judged to be Admirable are those whom meet Expectations and receive rewards, with an attributional structure (vertical) of  $a(+ +)$ , while those judged with Contempt neither meet Expectations nor receive rewards, with a structure of  $a(- -)$ . The distribution (horizontal) emotions of Inferior  $d(- +)$  and Superior  $d(+ -)$  fit in the correct relationship, with Ego's display of Admiration towards the superior structural other position when accompanied by liking for other, while the display of Contempt directed towards the inferior structural position when accompanied by dislike. These are in accord with Fessler's logic and align with the BIAS emotion types of the SCM (**Fig. 3.1**).

However, for the Power Disadvantage/Advantage pairings in **Fig. 16.3** (right two), the other-evaluative emotions of Envy and Pity do not match the expected attributional E/S forms to agree with the BIAS emotion type positions in the Social Self Model. A Power disadvantage position has the attributional structure (vertical) of  $a(+ -)$ , meeting expectations but not receiving rewards, while the Power advantage position has the structure of  $a(- +)$ , not meeting expectations but receiving rewards. The distribution (horizontal) emotions of Superior  $d(+ -)$  and Inferior  $d(- +)$  in the right two forms combined with liking and hostility, respectively, would produce Pity\* (other inferior but liking other) for the Power disadvantage, which isn't correct. Precisely the opposite is found by the SCM's BIAS emotions, in which social cognitive biases produce Envy not Pity emotions towards groups/individuals that are Competent but Cold, equated with displaying Autonomy and Power, and in the bottom right quadrant. Similarly, the reverse in the Power advantage structure would expect Pity directed towards an inferior other what is liked, yet the subtle structure towards other is one of Envy.

Once possible explanation for the discrepancy between the Status and Power conflict forms not aligning with the feeling rules described by Fessler might be that inferiority and superiority judgments are not solely based upon distributional differences of meeting expectations. While Thamm's system defines the distribution of meeting or not meeting expectations the source of feelings of inferiority or superiority, to agree with the analytics of social cognition as measured by the SCM and the BIAS emotions, as well as with Fessler's emotion rules, it could be that inferiority and superiority are judged differently from Status and Power perspectives. Whereas social cognition judges others via Warmth and Competence dimensions, the SCM defines Competence as the Status dimension, while Coldness aligns more with the user of Power. However, Warmth is equated with liking and with Status according to Power Status Theory of Emotion (Kemper, 1978). Status is viewed differently between the two models, which must be resolved.

While Thamm's mapping of inferior was stated consistently as one not meeting expectations while the other met expectations, the dynamics of power may actually ignore this distributional relationship and weigh inferiority or superiority via an attributional or interactional comparison. Therefore, subtle emotions of Power dynamics may produce the other-evaluative emotions from a reversal of expectation logic, as not meeting expectations but still receiving rewards is the definition

of the Power attributional structure, and would make one superior to someone who's not in power contexts. It may also be the case that emotion dynamics of expectation differentials change as one matures, with Envy and Pity changing context, which is a hypothesis of this study to be reviewed later.

In most societies, Shame remains hidden, covered up both psychologically and through convention, making it difficult for empirical study and making the Bengkulu focus on shame quite unique. In societies where shame is unacknowledged, there are two variants. One variant, termed overt/undifferentiated shame, perceived by self vaguely and invisibly leading to paralysis, although it's accompanied by familiar shame-like body language (lowered gaze, physical hiding, blushing, speech disruption) (Lewis, 1971; Scheff, 1988). The other variant, termed bypassed shame, lacks the outward signs from body language, are covert and not displayed; instead speech and gesture are disrupted, halting and sped up in a repetitive obsessive quality (Lewis, 1971).

The overt, undifferentiated variant of Shame represents a negatively felt evaluation of self, hidden yet accompanied by a non-verbal display, which provides a clue as to its underlying adaptiveness. Embarrassment, which can be considered to be a prosocial emotion display as it signals to Alter one's desire for affiliation and acts as a sort of apology (Feinberg *et al.*, 2011), matches the nature of the overt behavior displays described by Lewis (1971). The displays could be seen an affiliative signal, a likely response to the ambivalent mix of emotions displayed by Alter, in this case Pity which besides the negative evaluation includes some affection (+) signaling affiliation.

The bypassed version of Shame also represents a negatively felt evaluation of self, avoided and without an accompanying display. Its self-conscious reaction from Contempt displayed by Alter, a doubly negative univalent blended emotion mixing moral superiority with condemnation, clearly lacks an affiliative dimension. Bypassed shame markers are covert and subtle, likely both a product of the disabling of social communication from the activation of the SNS in flight mode (Porges, 2007), as well as a protection from a univalent negative emotion which may signal aggression prompting the defensive fear response.

Interestingly, these two defenses AND the dimension of Sociability/Proximity along with a negative Model of Self resemble both the Emotion Motivation Theories Response Matrix in **Fig. 9.9**, as well

as the avoidance aspects of the two variants of shame matching the attachment style avoidance of the left hand quadrants (negative model of Self). Additionally, the four primary first order blended emotions (Contempt, Envy, Pity and Admiration) match the BIAS dimensions of the SCM model of **Fig. 3.1**.

Similarly, Pride also has two variants, one which has overt excessive displays like hubris and produces negatively valenced feelings when expressed in front of others, as well as pride which displays like confidence and is positively valenced (Tracy & Robins, 2007). A similar analysis of Pride's two forms originate from reactions to the two first order emotion displays by Alter from Envy or Admiration in **Fig. 16.3**. The overt/hubristic Pride display would match a reaction to the first order ambivalent Envy emotion, which contains the negative affect of Anger and can be seen to be a defensive reaction to the anger component. The valued, securely confident pride matches a response to univalent Admiration. Similarly, the mapping of these two variants to the ANS defense and Attachment styles would also match, with the overt Pride mapping to SNS activation of fight/narcissism defense, tinged with Anger and mobilization, while the secure Pride matches the Ventral Vagal Complex response, with its Secure feeling of attachment and doubly positive hedonic affect.

This provides evidence of the connection of both primary and blended emotion generation being tied to physiological ANS response, psychological Attachment style defense, neurophysiological expression of behavior via peripheral/vocal system expression and hierarchical functioning of the Polyvagal system. Additionally, it would also provide some confirmation the Psychological, Physiological, Behavioral and Social unity of the Social Self model.

## CHAPTER SEVENTEEN

### Shame & Self-Conscious Emotions

*“As we see our face, figure, and dress in the glass, and are interested in them because they are ours, and pleased or otherwise with them according as they do or do not answer to what we should like them to be; so in **imagination** we perceive in another’s mind some thought of our appearance, manners, aims, deeds, character, friends, and so on, and are variously affected by it. A self-idea of this sort seems to have three principal elements: the imagination of our appearance to the other person; the imagination of his judgment of that appearance, and some sort of self-feeling, such as pride or mortification.” Cooley (1922: 184)*

An early theorist of the social mind, C.H. Cooley, posited the Looking Glass Self (Cooley, 1922/1964), a model of the self as continually monitoring ourselves through the evaluative perspective of others. The “reflexive self-consciousness” (Scheff, 1983) used to self-monitor ourselves from the point of view of others originates in our own minds, producing two primary types of self-feeling: pride and shame. These two emotions, according to the Cooley-Scheff conjecture (Scheff, 1988), provide an evaluative component of self which is continuously active, where “adults are always in a state of either pride or shame, usually of a quite unostentatious kind,” which provides a basic model of self-esteem (Scheff, 1988: 399).

The perception of others’ evaluation of ourself originates from our imagination of what others are thinking. As presented earlier, self-perception can be influenced and distorted by a number of factors, such as how one is feeling at the moment or how one is postured, or by external cues, leading to misperceptions of self (Laird, 2012). This is also true of social perception of others, which is subject to many different biases which cause social misjudgment (Fiske & Taylor, 1991). Thus, second-order self-conscious emotions which arise from the imagined perceptions of others are prone to misjudgment, which for the resulting negative emotion of Shame originates, then, from illusion, although its effect can be real and painful.



The Deference-Emotion System theory (Scheff, 1988) explains how conformity is enforced in the absence of formal sanctions via self-conscious emotions Pride and Shame, positing these emotions act as a “subtle and pervasive system of sanction of behavior,” serving as punishment and rewards for meeting expectations for social behavior (norms) (Scheff, 1988:396). Both emerge from the continuous process of social self-monitoring, which pervades social thought and leads to positive or negative self-evaluations (Scheff, 1988). The Deference-Emotion System posits that Pride and Shame operate not only internally, but interact “*between and within* interactants...to guarantee an alignment of thoughts, feelings and actions of individuals” (Scheff, 1980: 397). Shame especially, as well as combinations of it with Anger and/or Rage, spirals and grows with an unlimited ceiling, producing chain-reaction feelings of shame about feeling ashamed, producing shame upon shame, spreading like contagion (Scheff, 1988). Pride, too, can sometimes be the source of Shame (Scheff, 1988). Pride and Shame share a recursiveness in which shame accrues from displays of both, which can accumulate in a triple spiral in which each interactant can experience their own spiral of shame, while a third spiral can occur for their shared perception of each other’s shame (Scheff, 1980).

They are examples of self-conscious emotions (Pride, Shame, Embarrassment, Guilt) evoked by the complex sense of self composed of self-awareness (the experiential I-self) and self-representation (the objective me-self), twin processes involved in self-evaluation (Tracy & Robins, 2007). Self-conscious emotions “motivate individuals to protect, defend, and enhance their self-representations, which in turn allows them to maintain their place in the social group and avoid social rejection” (Tracy & Robins, 2007). They are central towards guiding peoples’ thoughts, feelings and behavior (Tracy & Robins, 2007). While every emotion may be affected by the self process (Tracy & Robins, 2007), self-conscious emotions play a particularly significant role in human social interaction, especially in regulating individual adherence to conformity (Scheff, 1988).

However, in most western cultures, which are predominantly individualistic, Shame and Pride are largely taboo and low-visibility (Scheff 1987; Fessler 2004), while in collectivist cultures, Shame is considered a far less negative emotion (Tracy & Robins, 2007). Western cultures have feeling rules against showing negative self-conscious emotions, especially Shame, which overrun personal feeling and leave little avenue for discharging such feelings, leading to alienation (Scheff, 1987).

Lewis (1971) proposed a model of Shame having these two forms: overt/undifferentiated and

bypassed, with each appearing to have opposite behavioral and implicit emotional responses (Scheff, 1988). Both forms are unacknowledged, strongly negative evaluations of Self characterized by hiding and feelings of inferiority. Moreover, these forms of Shame are *invisible* to not only the emoter, but to the analyst themselves (Lewis, 1971).

Undifferentiated Shame's overt style elicits feelings of pain from social humiliation or embarrassment, expressing itself in hiding behavior characterized by "speech disruption, lowered or averted gaze, blushing, barely audible speech", as well as vocabulary used to denote feelings which hide shame, instead using alternate less emotionally impactful words (i.e. feeling foolish, insecure, stupid) (Scheff, 1988:401). The emoter feels the emotional pain of undifferentiated Shame, but doesn't recognize its source, seemingly hiding it from themselves and others (Scheff, 1988). Additionally, undifferentiated Shame tends to bias consciousness towards an experiential subjective "I" orientation.

Bypassed Shame's covert style "avoids the pain through hyperactive thought, behavior and speech," "stepping outside of self, into the 'me' phase of the self, as if the pain were not happening" (Scheff, 1980:402). The covert style evades both the emoter and other's conscious awareness of pain. The hyperactive nature of the bypassed form resembles OCD and has been characterized by other researchers as leading to obsessiveness. It is also accompanied by a narrowing of focus onto a single issue and social isolation from others (Scheff, 2007).

Both of these Shame types regularly lead to the emoter yielding to self-conformity following sanctioning imposed by a norm. However, while everyone experiences similar pain from Shame, those with high self-esteem are able to self-regulate, acknowledge and discharge it, while low self-esteem emoters have problems regulating it (Scheff, 1980). Left unacknowledged and unchecked, it's malignant form can cause recursive rumination which can spiral to pathological states of conformity (Scheff, 1980).

In either form, the role of Alter's condemning emotions, either expressed explicitly by alter's reactions or implicitly by an imagined audience's feelings, enforced by self, produce negativity in Ego directed explicitly outward towards others (Resentment) or implicitly inward towards Self (Guilt) (Scheff, 1988). Guilt, Shame and Embarrassment "are associated with social and moral

transgressions, involve self-awareness, and motivate reparations for transgressions” and have been found to be distinct universal emotions (Keltner & Buswell, 1996: 155). Embarrassment is an autonomic response given when breaking minor social rules around social strangers (Keltner & Buswell, 1996: 155). However, Guilt in particular, is often conflated with Shame as well as with the self-conscious emotion of Embarrassment, especially in western societies (Keltner & Buswell, 1996).

Guilt is an interactional emotion, caused by action taken by Ego, while Shame is a self attributional emotion, attributed to Ego. The Guilt complex is the result of using power in social interaction to gain unearned rewards and causing harm to others (Thamm, 2007). The negative feeling of Guilt motivates repair of a social bond brought about by (social) harm caused to others, driving prosocial behaviors of empathy, altruism and caregiving (Tracy & Robins, 2007). Likewise, the positive feeling of Pride also drives prosocial behaviors (Tracy & Robins, 2007). And yet, Shame is characterized as the self-conscious emotion which holds groups together, in its inward negative focus which

Lewis (1971) outlined the Self - Other Relationship for both Guilt and Shame after her systematic analysis of hundreds of psychotherapy sessions. Lewis’ “discovery” of shame in sessions in which neither the analyst nor the subject were aware led to the insights of two types of hidden shame, undifferentiated and bypassed. Lewis’ study was the first to systematically explore Shame and Guilt, and her framework for understanding these two central emotions of social interaction explains their opposing dynamics.

**Self Other Shame Experience**

**Self (unable)**

1. Object of scorn, contempt, ridicule; reduced little
2. Paralyzed, helpless, passive
3. Assailed by noxious stimuli:  
    rage; tears; blushing; fluster; blank
4. Feels Childish
5. Focal in Awareness; being looked at; split
6. Functions poorly as an agent or perceiver; divided between  
    imagining self and the other; boundaries are permeable; vicarious  
    experience of self & other.

**Other (able)**

1. The source of scorn, contempt, ridicule
2. Laughing, ridiculing; powerful; active
3. Appears intact
4. Appears adult; going away; abandoning
5. Also focal in awareness; looking at
6. Appears intact

**Self Other Guilt Experience**

**Self (able)**

1. The Source of guilt, as well as pity & concern; regret, remorse
2. Intact
3. Adult; responsible
4. Occupied with guilty acts or thoughts
5. Functioning silently

**Other (unable)**

1. Injured, needful, suffering, hurt
2. Injured
3. Dependent, by implication
4. Subject of thought as Related to guilt, otherwise, "other"  
    need not be involved
5. Nothing comparable to vicarious experiences of shame,

**Fig. 17.1** - Shame & Guilt Experiences - *Source: Lewis (1971)*

**Fig. 17.1** shows the qualities of experience of Shame and Guilt from both Self and Other's perspectives. Shame signals a perceived threat to the social bond where the Self is *unable* while Other is *able* to regulate the emotion. It is an attribution emotion from both Self and Other's points of view, which leads to self blame and contempt from Other. From the Self's point of view, it includes feelings of scorn, ridicule, contempt; renders one paralyzed/helpless/passive; accompanied by noxious stimuli like rage, tears, blushing, fluster; focus of negative attention; and feelings of childishness and helplessness (Lewis, 1971). Other's point of view includes feelings of scorn, contempt and ridicule; behaviors of laughing, ridicule, power; associated with adult and abandoning, focusing on negative attention. These are the familiar characteristics listed in the figure above.

Guilt also signals a perceived threat to the social bond where the Self is *able* and Other is *unable* to

regulate the emotion. It is a negative interactional emotion from both Self and Other's points of view, which leads to unsatisfactory exchanges and a breakdown of interaction. Self is the source of guilt, although it stems from Self's action, rather than as an attribution of Self from Others emotional display, with Self feeling the adult role, responsible for the action, which remains a silent self-conscious feeling. It is a response to the action taken against an un-able Other, who feels injured, needful, suffering, hurt, and dependent.

While Self-Conscious emotions, particularly Shame, had been for decades been an unapproachable subject for discourse let alone even for academic study, it has emerged as a serious subject of empirical study. It also has emerged as subject in popular discourse, as the popularity of the Tedx talk by psychologist Brené Brown on the power of vulnerability demonstrates that people recognize the desire to overcome Shame. Brown identified that when people shared their story about love, belonging and connection, they usually focused upon events in which they felt heartbreak, exclusion and disconnection, all of which share an unnamed sense of Shame.



**Fig. 17.2** - Brené Brown Tedx Talk <https://youtu.be/iCvmsMzIF7o> - Source: Brown (2010)

Brown's (2010) research found that people successful in their ability to overcome shame do so by showing vulnerability and dealing with the uncertainty of being deeply seen, growing their sense of

worthiness, letting go of blame, sticking their neck out to initiate connection and loving with their whole hearts. This research also found that people successful in overcoming Shame had in common three traits: Courage, Compassion, and Connection (Brown, 2010). These people had the courage to be imperfect, compassion to be kind to themselves first, and to others, and connection as a result of living as their authentic self, not who they should be (Brown, 2010).

Courage, Compassion and Connection have a resemblance to the other focused emotions of Contempt, Anger and Pity which evoke self-conscious emotions. In the interpersonal domain, Brown offers Courage, Compassion, and Connection as common socio-emotional traits of those whom have been successful overcoming negative self-conscious emotions resulting from moral judgments, sometimes self inflicted and other times from being the object of negative moral judgments by others, or perhaps in other cases, imagined. Contempt, Anger and Pity (and Admiration) other-evaluative BIAS emotions (Cuddy *et al.*, 2008), which Fessler (1999) identified as first order emotions which systematically evoke second order Shame-like and Pride-like emotions in the overt feeling rules of the Bengkulu, match the set of emotions offered by the CAD Hypothesis in its attempt to “systematize and taxonomize” a set of the Moral emotions emanating from social structure (Rozin *et al.*, 1999: 574). The CAD Hypothesis posits that each of the Big “Three” Ethics of morality: Community, Autonomy, and Divinity. Recall, these ethics represent universal domains of social ordering used to frame and resolve moral issues (Rozin *et al.*, 1999). They have signature other-condemning moral emotions used to punish violations of morals, with Contempt linked to violations of Community, Anger linked to violations of Autonomy and Disgust linked to violations of Divinity.

This study offers that, in agreement with Fessler’s second order emotion theory, being on the receiving end of CAD condemning emotions evokes second order self-conscious emotions. The CAD emotions (Contempt, Anger, & Disgust/Pity) will trigger forms of Shame (Lewis, 1971) that lead to social withdrawal, while Courage, Compassion and Connection act as antidotes to overcome these forms of Shame, respectively, where each of Brown’s suggested motivational salves repair emotional self-alienation by rejoining dissociated affect and intentional evaluation by helping to discharge negative self-conscious emotions. The Big Three Ethics are contexts for attributing causation, where Community, representing a group level focus and Autonomy an individual level focus, Divinity presents an unknown interpersonal focus. The complex relationship between the Big “Three” Ethics, the CAD emotions and the self-conscious emotions they evoke, as well as the three C’s of emotional

self healing, emerge among two dynamics, one related to person perspective/focus (Group focus, Other focus, Self focus) and the other related to a behavioral output of Approach or Avoidance, mediated by emotion categories and autonomic functioning, which will be covered later in this study.

Traditional psychological accounts of self-conscious emotion generation offer an appraisal model using self-evaluation and self-attributions (Tracy & Robins, 2007). Appraisals determine the relevance of a social event to one's social identity, and along with situational details, generate the appropriate self-conscious emotion. The necessary components for appraisal are attention on self-representations, appraising for congruency and attributing the cause to an internal factor, as well as taking into account situational factors (Tracy & Robins, 2007). Their model explains the differentiation between Shame and Guilt coming down to the difference between negative feelings about the global stable self (Shame) versus Guilt's negative emotions originating from situational behavior, while attribution versus situations also accounts for the dual types of Pride (Tracy & Robins, 2007).

*"In order to experience embarrassment, guilt, pride or shame, an individual must focus attention on his or her public and/or private self-representations; appraise the eliciting event (i.e., stimulus) as relevant to and congruent (for pride) or incongruent (for embarrassment, shame, and guilt) with identity goals; and attribute the cause of the event to some internal factor, blaming (or crediting) the self for the situation." Tracy & Robins (2007: 191)*

Self-conscious emotions require self-regulation and in fact underlie the control of emotion, or emotion regulation (Tracy & Robins, 2007). This implicit regulation may take a variety of forms to change the negative events as either congruent with self or caused by externalities, or other strategies, occurring outside of explicit consciousness (Tracy & Robins, 2007). One strategy can take the form of changing attentional forces to externalities and away from Self, preventing self-conscious emotions (Avoidance) (Tracy & Robins, 2007). Another strategy is to downplay negative self-evaluations (Denial/Overcompensation), while another strategy is to reappraise self-identity when self-representation is challenged by negative self-evaluation (Tracy & Robins, 2007). Yet another would be to reappraise the self, changing attributions of self and instead blaming on external situational attributes to be self-serving (Externalizing) (Tracy & Robins, 2007). Another can be

reappraising Shame to be blamed on another cause other than self, resulting in Guilt, which has less negative impact on self-esteem (Tracy & Robins, 2007).

Unrecognized Shame remains a leading cause of negative behaviors like blame and perfectionism, that can also lead to long term emotional troughs in Self-Esteem resulting in negative social and physical health problems, “including depression, chronic anger, and the narcissistic, antisocial, and borderline personality disorders” (Tracy & Robins, 2007). Shame also can spiral and affect others (Scheff, 1980). Most of all, Shame limits our experiences, especially of positive emotions. Yet these implicit emotion regulation strategies are overly psychological, in that they seem to lack the social connection and vulnerability findings of Brown (2010). Shame as a signal of the imagined threat to the social bond can be just that, a signal that one feels a threat to their bond with another.

Brown’s antidote for overcoming Shame requires reestablishing sense of worthiness, in the sense that everyone is worthy and deserving of connection and belonging, a universally shared basic social motivation (Fiske, 2004). The strategy to live with vulnerability rather than to numb it, which leads to the bypassed strategies which characterize modernity and alienation, including addiction, certainty, perfection and blame (Brown, 2010). This requires drawing attention of the unspoken and invisible Shame, something which requires becoming aware of awareness.



# CHAPTER EIGHTEEN

## Becoming Aware of Awareness

*“Consciousness...is a construct of the Social Perceptual Machinery. Awareness is a perceptual reconstruction of attentional state; and the machinery that computes information about other people’s awareness is the same machinery that computes information about our own awareness.” Graziano & Kastner (2011: 98)*

Control of Attention is a psychological primitive which is separable from and required for both cognitive and emotion tasks (Barrett, 2011). However, much of cognition and emotion occur outside of attention in subconscious automatic functioning. However, there is much disagreement about what exactly is consciousness and how does it arise. Many traditional theories posit that consciousness itself is an emergent property of the functioning of the whole brain which somehow, through information processing and brain synchronization, enables an emergent consciousness. However, that still doesn’t explain the “hard problem” of consciousness, that is, how it is that we subjectively “feel” conscious (Graziano & Kastner, 2011).

Attention Schema theory (AST) posits that consciousness emerges from the neural machinery processing social perception of others (Graziano, 2011). Like other types of perception (e.g., vision), social perception is processed and modeled in the brain, requiring the integration from a variety of sources of affective information read from other’s body language & facial expression, gaze, intonation, vocabulary, arousal state. These are combined to form a model of Other. Attention Schema Theory proposes that the phenomenon of awareness itself is simply a perceptual model of attention. AST defines attention as the focus of a large number of resources on a small number of signals, anything that can be attended to, like raw information. Awareness contains exaggerated information in the form of a schema, a not entirely accurate model of information from attention, one constrained by data processing limitations (Graziano & Kastner, 2011). Schema models are useful to guide behavior, and as models, they allow for information that can be pondered, thought about, visualized, located in the mind, etc. (Graziano & Kastner, 2011). Attention Schema Theory

posits the approximate model of paying attention of something, awareness, is simply a crude schematized attention. AST hypothesizes that the Social perception machinery for modeling the attention of social others was eventually utilized to model the attention of the Self, which emerges as self-conscious thought about thought.

The Social Perception used to model others' attentional state generates information about what the other is attending to, be it a sensory perception of the environment, a thing, an idea, etc, termed social attention (Graziano & Kastner, 2011). The ability of our minds to model this information must have been heavily favored by natural selection, since it provided information used to anticipate and predict another's future behavior, key information in social perception. However, when the awareness of attention is focused on self, the model applied to self would produce even greater adaptive value, since the self has access to so much additional information internally, i.e. body state, emotional state, sensation, etc, even in the absence of or before the advent of language. Attention Schema theory focuses not simply on modeling someone's (including our own) thoughts, beliefs, etc, but also on the modeling of attentional gaze and the motivation to know why and where social attention is directed (Graziano & Kastner, 2011). As social beings, we seek to know what others are attending to and thinking about.

Attentional gaze is registered largely by detecting and tracking the eyes of others, which Baron-Cohen (1995) hypothesizes evolved via a neurocognitive module called the Eye Direction Detector (EDD). The EDD follows eye gaze, movement and attention of others, typically emerging by the fifth month in infants and eventually providing "split second eye direction detection," while averting one's own eyes when other's eyes catch one staring at their eyes (Baron-Cohen, 1995: 42). The EDD provides information not only about another's attentional gaze, but also to another's intentions (Baron-Cohen, 1995). While other animals share this type of eye detection of others, it is invariably used in defense/dominance staring, as eye contact between strangers in most species entails risk and results in avoidance and fear (Baron-Cohen, 1995)). However, only primates and humans have EDD functionality for both avoidance and affiliative behavior (Baron-Cohen, 1995). Baron-Cohen begins his piece by describing subtle eye dynamics between a male and female during their initial meeting over the course of 15 minutes, only to reveal it occurred between two primates during observation, highlighting the striking similarities of primate eye dynamics with human flirtation.

Baron-Cohen (1995) also posits another neurocognitive mechanism which pairs with EDD to determine if one is attending to the same thing as another, which is termed the Shared Attention Mechanism (SAM). The EDD produces a dyadic representation between Self and Other's attentional gaze, while the SAM takes this as input to produce a triadic representation between Self, Other and an object, to determine if both are attending to the same object. When SAM identifies shared attention between Self and Other, it allows Self to be able to infer Other's "goal, desire or intention to refer," which contributes to Theory of Mind (ToM) (Baron-Cohen, 1995: 52). Moreover, the EDD allows for the construction of a simple propositional representation of an Agent or Self with an object or another Agent, while the SAM enables a recursive representation of a dyadic representation to another proposition, such as an Agent or self attending to one another about each's attending to a third object, which embeds within a dyadic relationship a reference to a proposition rather than simply to an object or another Agent.

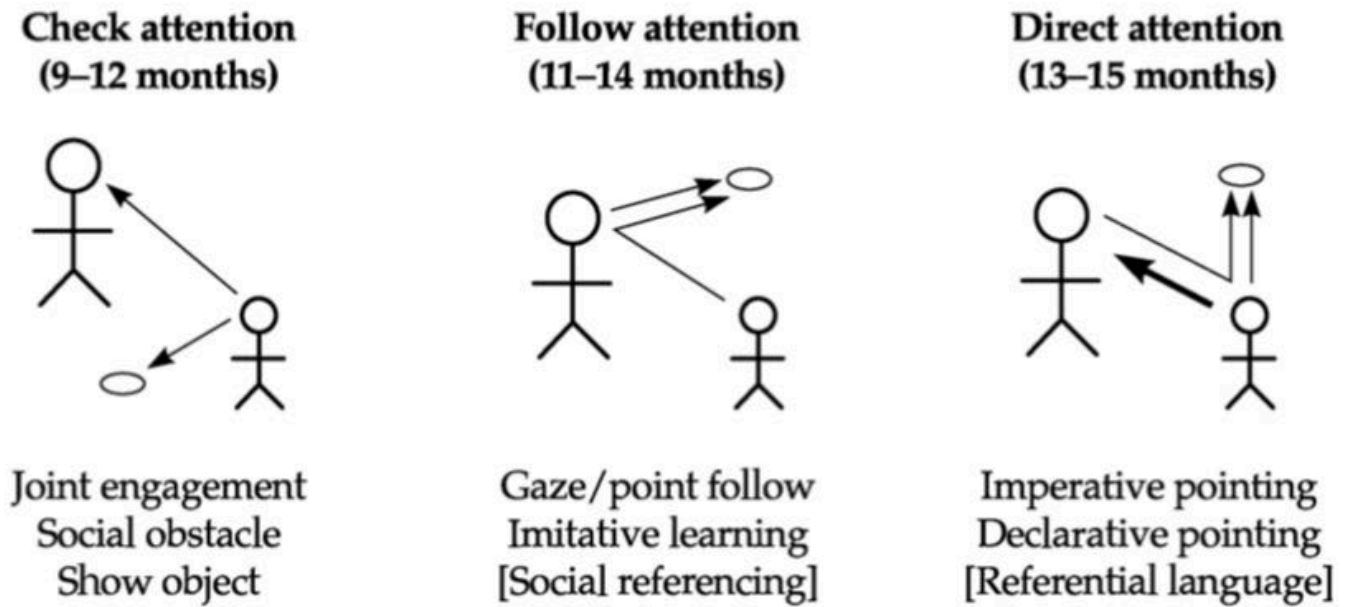
The superior temporal sulcus (STS) located in the posterior part of the temporal lobe is identified as the brain region responding to eye gaze direction (Baron-Cohen, 1995) and is commonly identified in third-person observational visual processing, not just of others but also of one's own self and self-movement (Iacoboni & Dapretto, 2006). The EDD's dyadic representation of Self and Other allows the STS to represent several different relations between the dyad, which include the self seeing other, other seeing the self, other seeing an object or the self seeing an object, a capacity shared with primates who have been shown to use another's eye gaze to find hidden objects (Baron-Cohen, 1995). However, the SAM allows for a triadic representation, one in which the self sees the other seeing an object, or one in which the self seeing other agents seeing each other, both of which include the representation of shared attention, the understanding of both seeing the same thing, which implies both know what each other are seeing and sheds light on what may be other's intentions (Baron-Cohen, 1995).

The SAM builds triadic representations from the dyadic representation output of EDD, allowing the inference of volitional elements of others indicating goals, wants or intention to refer from eye direction, all of which are simply additional relations between agents (Baron-Cohen, 1995). The child uses vision (or potentially other modalities like auditory perception or touch) to gain insight into the mental states of others to reduce uncertainty (Baron-Cohen, 1995). SAM allows the building of shared attention with another person, playing an insufficient but necessary step in the capacity of

ToM (Baron-Cohen, 1995).

This differs from Tomasello (1999) who, on the other hand, offers a different account of triadic joint attention that emerges in three distinct ordered hierarchical steps during development beginning near the end of the first year of infancy (Tomasello et al., 2005). According to Tomasello (1999), the desire to share emotional experiences with others develops from birth through the first 14 months and is at the heart of human social interaction and cultural transmission (Tomasello et al., 2005). This motivation provides the difference in human sociality, allowing for the construction of shared representations of social scenes providing the symbolic means of cultural transmission (Tomasello et al., 2005). Emotional engagement and shared intentionality provide a motivational drive to engage in the construction of “dialogic cognitive representations” which allow the sharing of goals and the same means of action towards goal achievement (Tomasello et al., 2005: 1).

According to Tomasello, human infants around 9 months of age begin to reference the attention of caregivers distally in order to make sense or “comment” upon objects in their environment. First, an object drawing the attention of the infant evokes a response to gain and reference the caregiver’s attention, which when their gaze is met, leads to an eye directed attentional pointing back and forth from the object to the caregiver, signaling the ability of social joint engagement. Secondly, a couple of months later the child comes to recognize and become interested in the caregiver’s attentional gaze towards salient objects, following their gaze to assess the object as a type of imitative learning, which signals the ability of social referencing. Thirdly, a couple of months later, the child begins to direct the attention of caregivers to objects using eye directed attentional (declarative) pointing towards objects.



**Fig. 18.1** - Three Main Types of Joint Attention Emergence -

*Source:* Tomasello (1999: 65, Fig. 3.1)

Tomasello's stage model explicitly contains an ordered series of stages which are universal for developing triadic joint attention beginning the "Nine Month Revolution," which precedes development of symbolic reference necessary for cognitive symbolic representations. Tomasello's critique of Baron-Cohen's nativist account portrays the EDD, Intention Detector and SAM as "independent social-cognitive modules" with their "own predetermined developmental timetable that is affected neither by the ontogeny of" (Tomasello, 1999: 67). ???

While Baron-Cohen (1995) references joint engagement, gaze following and declarative pointing in his account of the EDD and SAM, his own theory offers an explicit set of relations or rules allowing for social inference that emerge from, what is unstated, a mental model. That mental model allows for inferencing about states of mind of other agents (Baron-Cohen, 1995). The triadic form involves two agents sharing attention with some third object or stimulus, which begins as iconic or indexical references to objects, but can also refer volitional states like a goal, intention, desire which are early forms of symbolic reference, a necessary precursor to symbolic language production (Deacon, 1997).

Eventually symbolic reference is used to differentiate comparisons between mental states, as the child can glean that agents have mental states that can differ from the child (Tomasello, 1999). The early focus upon mental states of intentions, desires, and emotions extend to include beliefs and

knowledge others have, which the false belief test provides an measure of an important milestone in cognitive development (Tomasello, 1999). However, cross cultural research shows that not only are developmental age milestones variant across different cultures, but also that the order of emergence of particular progressions, which is typified by the different social environments in individualistic and communitarian societies, although other factors in the socialization environment can too affect both timing and progressive ordering (Wellman & Peterson, 2013). The recognition of different aspects of desires and beliefs of others' necessary to pass the false belief test typically emerges during preschool years through experience and learning via the following distinct set of capacities:

- (a) people can have different desires for the same thing (diverse desires, or DD)*
- (b) people can have different beliefs about the same situation (diverse beliefs, DB)*
- (c) something can be true, but someone might not know that (knowledge access, KA)*
- (d) something can be true, but someone might falsely believe something different (false belief, FB)*
- (e) someone can feel one way but display a different emotion (hidden emotion, HE)*

Preschoolers from western countries exhibit the emergence of each of these capacities in the order of DD>DB>KA>FB>HE (Wellman & Peterson, 2013: 57), although preschoolers in China, as well as other non-western countries such as Iran, follow an order of development in which knowledge access (KA) emerges before diverse beliefs (DB) (Wellman & Peterson, 2013). This is attributed to the difference in the socialization environment in Eastern countries high in communitarianism in that children are oriented in the family towards the group rather than in individualists where there is a conformity of attention to the group knowing. Additionally, ToM develops differently in children deprived of hearing spoken language, as deaf children raised by non-deaf caregivers, while deaf preschoolers raised by deaf caregivers show the same developmental milestones as control subjects, as well as the same order of emergence for their particular culture (Wellman & Peterson, 2013).

These capacities represent ways the child gains Understanding social others. The ability to infer the motives of others helps understanding of how other social actors view the situation, the person-in-situation, the focus of social psychology and important for social cognition (Fiske, 2014). Also central to development are ways the child gains Controlling their own behavior. Control can be meant in several senses, from regulating behavior as part of learning to avoid punishment and gain rewards, to

control of emotional responses requiring inhibition. In a general social psychological sense, control is about connecting the contingency between behavior and outcome, where lack of control causes motives to search the social situation to gain understanding of how one's own motives can be enacted successfully (Fiske, 2014). Controlling attention can in some sense be seen as central to both gaining Understanding and Controlling, in that the child can use person-in-situation information to better understand its own perception of risk and trouble with prediction when confronted with new or threatening stimuli. That information can be used for adjusting one's behavior towards some desired outcome via gaining a new understanding of the situation from a reading of the person-in-situation. Triadic shared attention is necessary for both person-in-situation inferences to mediate social uncertainty and deliberative action towards a goal under social uncertainty.

As important cognitive capacities for social interaction, Understanding & Controlling have correlated neurophysiological networks that are found through study of subjects with brain traumas localized to specific brain regions whose deficits allow for inference into structure and functionality (Roberts et al., 2018). These brain regions are structures identified by Graziano & Kastner (2011) as central in Attention Schema theory (AST) for controlling attention and modeling attentional states. These are the right hemispheric superior temporal sulcus (STS) and temporal parietal junction (TPJ), identified as the neural correlates for constructing the attention schema that enables conscious awareness (Graziano & Kastner, 2011). The STS and TPJ are both part of the mentalizing network or central-executive network (CEN) that engages in cognitively demanding processing of external information in preparation for action, decision-making, and judgments (Menon, 2015). In functional MRI experiments of the false belief test, the STS and TPJ both are consistently activated in network of brain regions which implement Theory of Mind (ToM) (Koster-Hale & Saxe, 2013).

The STS is active in observational perception of intention from motor movements as part of the Mirror Neuron System (MNS), where actions such as grasping create activation while mechanical movements are ignored (Graziano & Kastner, 2011). The STS is particularly important for understanding the social significance of biological movement, particularly of the face, eyes, lips in communication (and hands/fingers in American Sign Language (ASL)), as well as whole body movement, yet is also activated by static images of faces (Allison, Puce, & McCarthy, 2000). The posterior STS (pSTS) is the visual input to the MNS and receiver of "motor inference commands" generated by the MNS, which "allow matching between the sensory predictions of imitative motor

plans and the visual description of the observed action” (Iacoboni & Dapretto, 2006: 943).

Additionally, the STS is connected via bidirectional connections with the Amygdala which tags salient external stimuli for attention (Allison, Puce, & McCarthy, 2000). The MNS has been shown to display hemispheric lateralization across different modalities, with the left hemisphere MNS particularly sensitive to (Zaidel, 1978) while visual actions do not display lateralization (Koski et al., 2002). The STS is also lateralized, with the left hemisphere engaged in acoustic processing that becomes “increasingly linguistic,” while the right hemisphere engaged in the perception of face, voice, gaze and TOM (LeRoy et al., 2014).

The TPJ is active in cognitive ToM through production of third-person, observational inferences of temporary states such as beliefs or goals/desires (Rogers et al., 2018). However, the TPJ has been shown to be functionally heterogenous, with subregions having some overlap while also showing distinct connectivity patterns (Igelström et al., 2016). The TPJ is also strongly lateralized in functionality (Graziano, 2018). The left TPJ is the site of angular gyrus and Wernicke’s area in which external visual/auditory information is received and translated into language (written or spoken). The lateralization found in the MNS for sound perception (Iacoboni & Dapretto, 2006) mirrors the lateralization of the left TPJ which processes sound in addition to visual information, unlike the right TPJ which processes vision only (???)

The right TPJ is involved in maintaining attention to social features from the external environment, both of oneself and of others. One particular subregion, the right dorsal TPJ, was shown to be activated in a variety of different tasks ranging from ToM to attentional switching while other subregions were specialized (Igelström et al., 2016). Additional studies of right dTPJ activations for subjects with ASC compared with controls showed no differences except for a projection from the right dTPJ to the left Crus II area of the Cerebellum, which showed significant decrease in connectivity indicating a potential deficit in social perception and potential target for regenerative therapies (Igelström, Webb & Graziano, 2017).

Experiments designed to temporarily disable the right TPJ using transcranial magnetic stimulation (TMS) have found that in cases of moral judgments of others behaviors, while moral judgment itself is still operational, disruption of the right TPJ fails to account for the contributions of person-in-situation information, such as other’s mental states (Koster-Hale & Saxe, 2013). Disruption to the



right TPJ has also shown to slow performance on the false belief test (Koster-Hale & Saxe, 2013). Additionally, the right TPJ has been shown to be particularly active when detecting information which goes against expectations based on others' mental states (Koster-Hale & Saxe, 2013). While damage to Wernicke's area in the left TPJ leads to deficits in language production (aphasia), although not typically as disrupting to language comprehension (understanding), damage to the right TPJ leads to hemispatial neglect (failure to attend to items in the left hemisphere, not simply visually but also of self, ie not shaving the left side of the beard), representing a lack of understanding (Graziano & Webb, 2014).

Studies of social awareness of non-intentional socially awkward situations have identified precisely the region where the right STS and right TPJ meet which shows differential activation levels between Neurotypical (NT) and Autism Spectrum Condition (ASC) subject groups, with the autistic group showing atypical hypoactivation despite no differences in structural connectivity (Pantelis et al., 2015). An interesting hypothesis is that the right STS contains a "pseudo-somatotopic map" (Koster-Hale & Saxe, 2013) processing the social movements of the mouth, then hands, then body, then head and eye movements, which could convey a map processing from what one is "doing or intending" to where one is "looking at or seeing"...culminating in the following conjecture:

*"the STS may contain a map of others actions that move from externally observable body movements (anterior end) toward invisible mental states (posterior end), culminating in the rTPJ, which responds to thinking about what a person is thinking." Koster-Hale & Saxe (2013: 148)*

However, while these results of the lateralized right STS and right TPJ are promising in localizing functionality of the seat of social awareness, caution must be made from claiming a direct neural correlate, as awareness depends upon many different brain regions and functional networks, and "no interesting behavioral task can be accomplished by a single region" (Koster-Hale & Saxe, 2013: 145).

The ventral medial prefrontal cortex (vmPFC), the central region active in the Default Mode Network (DMN), is the site of recall of situations from memory and association with past "bioregulatory states" offering response options from past experiences (Bechara, Damasio & Damasio, 2000). In tests of skin conditioned responses (SCRs) during a gambling task of both patients with vmPFC

damage and control subjects, both experienced similar SCRs for both rewards and punishments for selecting the right or wrong card; however, where they differed was in the anticipatory SCR which grew in activation for control subjects during the time before the card flip, while for VM patients they did not, indicating the vmPFC is involved in learning to anticipate a reward or punishment from past experience (Bechara et al., 2000).

The ability to control attention and keep focus on one thing, be it external stimuli or internal thoughts, has important ramifications for complex working memory tasks. The measure of Working Memory Capacity (WMC), which tests the number of things one can remember during a complex working memory task, is thought to represent a measure of both memory and processing that is indicative of the ability of executive controls to control attention (Barrett, Tugade & Engle, 2004). This component of executive controls has been found to explain individual differences in the ability of controlled processing over automated processing, the twin processes of Dual-process theories. Barrett and colleagues assemble evidence of the ability of the executive controls to suppress or inhibit automated processing and engage in controlled processing in attention-demanding circumstances depends on the ability to switch into deliberate controlled attention (Barrett, Tugade & Engle, 2004). When automatic sensory processing of important stimuli from our social environment “capture” attention implicitly, it launches the recall of “knowledge structures” which will control behavior, thoughts, and feelings (Barrett, Tugade & Engle, 2004: 3).

Challenges to Attention Schema theory require addressing several questions (Graziano & Kastner, 2011). The first involves answering how the simple processing of awareness by the social perception machinery is different than the actual feeling of being aware. Attention Schema puts everything in terms of computing information, envisioning the mind like a computer. However, Polyvagal theory and Interoception explain the integration of mind, body, and embedding feeling (emotion) in the complex interplay of autonomic functioning controlled by the social engagement system (Porges, 2007) receiving feedback via interoceptive afferent pathways (Craig, 2015). Attachment Theory and Affect Regulation provide other evidence, as affective information gleaned from exteroception (from others) and interoception (from self/body) are processed by right-hemispheric cortical areas connected to the orbitofrontal system, which connects to the vagus nerve providing parasympathetic control over the SNS and DVC (Schoore, 2008; Craig, 2015) and possessing "a vocabulary for nonverbal affective signals such as facial expressions, gestures, and vocal tone or prosody" (Schoore,

2000). Schore provides even more in the following:

“Attachment patterns are now conceptualized as ‘patterns of mental processing of information based on cognition and affect to create models of reality’. The ‘anterior limbic prefrontal network,’ which interconnects the orbital and medial prefrontal cortex with the temporal pole, cingulate, and amygdala, ‘is involved in affective responses to events and in the mnemonic processing and storage of these responses’, and ‘constitutes a mental control system that is essential for adjusting thinking and behavior to ongoing reality.’ ” Schore (2000: 35)

Thus, the prime candidate for locating the social perceptual machinery described in Attention Schema Theory, as well as its evolution, resides in the orbito-prefrontal area connected to visceromotor areas, the executive controls of the social engagement system (Schore, 2009), instrumental in Polyvagal Theory, Attachment Theory, Affect Regulation, Interoception and the Theory of Constructed Emotion.

It is precisely this modeling of Self and Other, which we’ve seen at the level of First & Second Order Emotion Generation (Fig. 16.2), along with the expectation and prediction system for mediating risk, homeostasis and readying for action, that inform the functioning of the Social Perceptual machinery of Attention Schema theory at physiological, psychological and social levels of study. They answer the challenges to Attention Schema theory. The machinery for social perception “feels” through the vagal and spino-thalamic afferent pathways, transmitting affect (feeling) body information to the brainstem and higher cortical areas, integrated and modeled in the anterior insula, the seat of subjective awareness (Craig, 2003). Awareness gains access to modality-spanning information via the VVC’s connections to upper right-hemispheric peripheral sensorimotor connections pooled in the Orbitofrontal Cortex (OFC). The question of Simulation theory and mirror neurons is less clear, although the proposed sites for modeling Self and Other modeling are proposals of Polyvagal theory (Porges, 2007) and provide compelling direction for further study.

Attention Schema theory is revelatory, for it posits that all living creatures have consciousness to some degree (Graziano & Kastner, 2011). And certainly most vertebrates have internalized models of others as well as have rich feeling states which inform those models. Thus, to fully use our consciousness, we can become aware to the fact that humans share this world with other living

species with internal models and emotions. It is possible then to empathize not simply with other humans sharing our vast similarity, but with all living creatures. This process of waking up to the awareness of Awareness benefits not only oneself and those directly connected, but to those connected by third orders or more (Seppala, et al., 2013).

Attention Schema theory in the context of Polyvagal Theory and the P/S Theory of Emotion also gives some credence to Julian Jaynes' Bicameral Mind thesis, which posits that consciousness and rationality didn't fully emerge until very recently in human history, some 3000 years ago or so (Jaynes, 1976). Since consciousness has to do with the modeling Self and Other, and becoming aware of subconscious mechanisms and processes, humans are still in the process of developing consciously throughout our lives. While Jaynes' identification of the corpus callosum being the causal agent of the breakdown of the bicameral mind might be decidedly wrong neurophysiologically, the heavily right-hemispheric orientation of the Social Engagement system and its development could very well have further evolved during the course of recorded human history through selection pressures presented by new cultural forms, as becoming aware of interoception through contemplative cultural patterns may have permitted deeper states of consciousness. Genetic evolutionary processes happen on a much shorter timescale than thought in the years since Darwin, as quickly as a generation or two (Wilson, 2015).

The conscious control of attention and direct control over awareness, overriding automatic controls, has grown in humans and enables directed conscious rationality. The ability to arrest automatic implicit processes and activate conscious control, particularly in the face of threat reactivity, stress and informational overload, enables human beings to cogitate intentionally and react based on knowledge and experience rather than reactively. Knowledge of this fact, and of the neurophysiological, psychological, social and cultural effects of conscious control, enables conscious formulation of cultural values and social behaviors or practices to gain more control, and thus, think and act intentionally. Awakening at the cultural level happens as the human population reaches a critical mass of people gaining better control over awareness, providing some support for a thesis such as Jaynes', albeit from a process-view instead of physiological view.

How is it that we're able to often "run on autopilot", which involves thinking, believing and feeling without really truly being consciously in control and self-reflective of those processes? What

underlying system of control exists that's able to process information sensorially, translate it to semantic knowledge and convert it into cognitive and behavioral action in vary degrees of conscious awareness?

# CHAPTER NINETEEN

## Semantic Differential & Affect

*“...evaluation, potency, activity are not simply dimensions of words, but they are the hidden language, the affective Rosetta stone that allows the mind and the body to communicate.”*

*Clore & Pappas (2007: 6)*

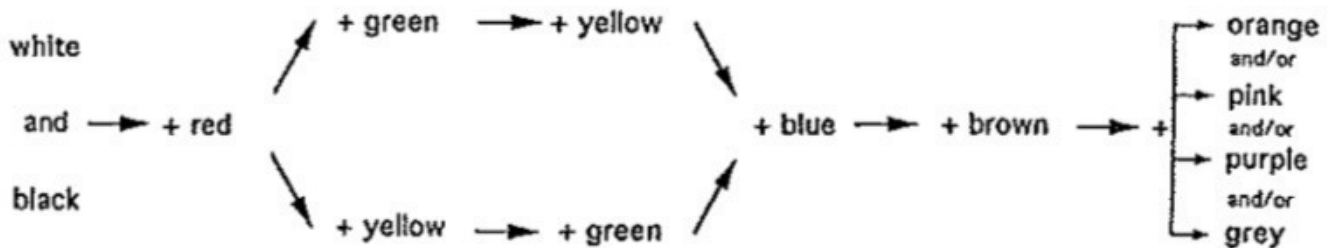
Early attempts to empirically study the experience of consciousness began in the late 19<sup>th</sup> century in the field of psychophysics. Efforts to make an objective science out of subjective experience resulted in methods to determine the relations of physical properties of a stimulus with the psychological properties of sensation. Several decades of experimentation uncovered the thresholds of sensory perception and the adherence of perception to orderly laws such as Weber’s Law, Fechner’s Law and Steven’s Law, which related sensation not only across modalities but also across species (Kihlstrom, 2011). Psychophysicists discovered core qualities for each of the different modalities of perception (vision, audition, felt touch, etc.), which were thought to be the essential building blocks of the sensory space from which all sensation was constructed and whose neural structure could be localized. Vision science found qualities of color, saturation and hue to be elementary that provided physiological attunement to unique neural pathways processing vision, which were eventually localized in the rods and cones of the human eye.

The subjective experiential qualities of these modalities were termed qualia, essentially the “atoms” of the sensory space for each modality from which all experiences within that modality could be composed (Kihlstrom, 2011). Efforts to map the qualities of other modalities, for example taste, resulted in finding four qualia from which all tastes could be described: sweet, sour, salty and bitter. However, the diet of the researchers of the day limited their exposure to all tastes and the fifth dimension of taste, umami (savory), was not recognized until years later by Japanese researchers whose diet included savory tastes like soy. The European researcher’s lack of environmental experience with the full palette of tastes highlights the fact that introspection is dependent on experience, which can be limited by exposure to some stimuli, or put more simply, that in effect, the

content of what's perceived can be limited by cultural experience (Kihlstrom, 2011).

Interestingly, the qualia discovered by the early psychophysicists were found to have unique qualities in language that were consistent across cultures (Kihlstrom, 2011). Linguistic terms for qualia are found to be *monolexemic*: single words that are used in language that expresses their quality alone. The linguistic terms for the products of combining qualia differ in that they also are the name of things or compound words. Take for instance the colors perceived as primary (blue, green, red and yellow), whose labels in English describe nothing other than their basic color, a trait shared with several other primaries like black, pink, and brown. However, words for other colors are commonly the names of things having that color: orange, sky blue, olive, lilac, indigo, etc.

In a landmark study of color perception across the world, cultures differ which colors they discriminate semantically (Berlin & Kay, 1969). The cross-cultural study of basic emotion terms provides evidence that cultures may vary in the semantic categories for color they consider basic, although the way in which different sets of primary colors are distinguished follow a systematic hierarchical order (Berlin & Kay, 1969). Some cultures have been found to only have two basic terms for color, while others have been found having four, six or other combinations. However, across all cultures studied, no matter how many colors they have terms for, the number of basic color terms follow in a very particular order of perception.



**Fig. 19.1** - Berlin-Kay hierarchy of basic color terms - *Source*: Davies & Corbett (1994: 67, Fig. 1)

Cultures having fewer basic color terms recognize these basic color categories in a particular order, as seen in **Fig. 19.1**, consistent across all cultures studied. Cultures having only two basic color terms use dark-cool and light-warm, with the other basic hues being sorted into the former (blue, green, brown) or the latter (white, red, yellow, pink, orange). Cultures with only three basic colors will have dark-cool, light-warm and red as distinct color terms. Cultures with four or five add green and yellow

in either order, while cultures having a sixth term adds blue. Cultures having seven terms add brown to the previous six, and so on through cultures having terms for all eleven. Russian provides a lone exception by having a twelfth basic color term distinguishing an additional primary light blue from blue (Davies & Corbett, 1994). These results reflect a universal human perception of color from a common set of neurophysiological processes, but which may be subdivided or recognized differently depending upon culture (Kay & McDaniel, 1978).

The empirical search for the atoms of sensory experience began with the structuralist movement in psychology in hopes of understanding the mind and finding neural correlates of subjective experience. The search for the qualia of emotions was led by the founder of the movement himself, William Wundt, who posited that all emotional experience could be composed of three essences: pleasantness versus unpleasantness, excitement versus calm, and strain versus relaxation. While Wundt's hypothesis was offered in the nineteenth century, it lay dormant through the Behaviorist movement, which dominated psychological study before the cognitive revolution. Quietly, emotion studies too began again in the 1960's and soon became a counter to the strictly cognitive scientific effort to understand the mind. An early set of findings from the study of language semantics provided an analogue to Wundt's early hypothesis on the qualia of emotion.

Osgood, Suci, & Tannenbaum (1962) discovered that affective content of semantic meaning can be measured by the Semantic Differential (SD), which measures connotation. The SD is a differential ratings scale using bi-polar adjectival pairs to get at the meanings of words, where adjectives describe things, people, institutions, concepts, events. By rating words across hundreds of adjective pairs, each running on a scale from -4 to +4, the SD found through factor analysis three cross-culturally universal dimensions of affective meaning inherent in language, each corresponding to an aspect (qualia) of affect (Osgood, Suci, & Tannenbaum, 1962). Together these affective dimensions create a universal 3-D affective space in which all semantic terms can be located, whose positional relation in that space represent their connotative meaning (Heise, 2006).

The SD's three dimensions are similar to Wundt's emotion qualia, which could be described by sorting the bi-polar adjectival pairs for each dimension, termed Evaluation (E), Potency (P) and Activity (A). Some examples of adjectival pairs used to describe these EPA dimensions include:



**Evaluation (E)**

positive: nice, sweet, heavenly, good, mild, happy, fine, clean

negative: awful, sour, horrid, bad, intense, sad, coarse, dirty

**Potency (P)**

positive: big, powerful, deep, strong, high, long, full, many

negative: small, powerless, shallow, weak, low, short, empty, few

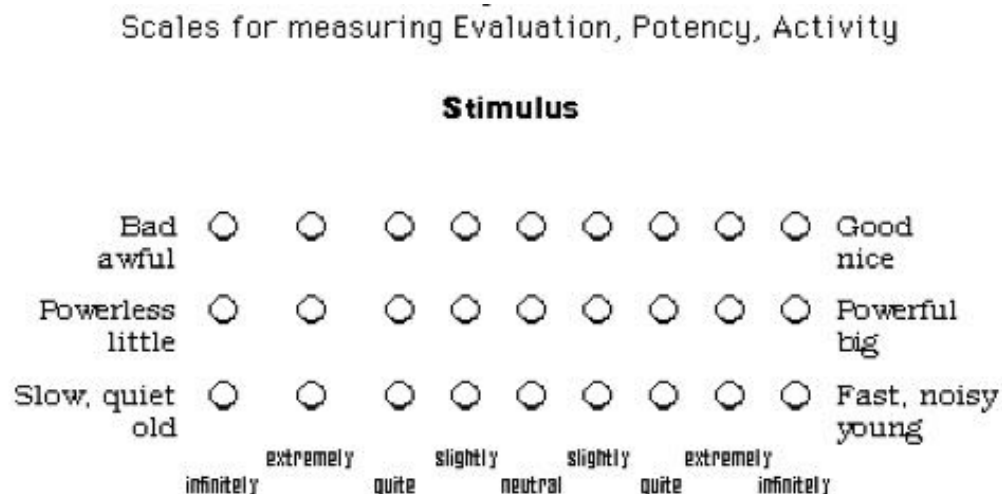
**Activity (A)**

positive: fast, noisy, young, alive, known, burning, active, light

negative: slow, quiet, old, dead, unknown, freezing, inactive, dark

(Heise, 2006)

Within each EPA dimension, “terms are correlated...something judged sweet is likely to be judged clean also,” while terms across dimensions are uncorrelated where “sensing that something is powerful provides no clue as to whether it is good or bad” (Heise, 2006).



**Fig. 19.2** - Semantic Differential Bi-Polar Rating Scales - *Source: Schneider & Heise (1995: 4, Fig. 1)*

“Evaluation concerns goodness versus badness, Potency concerns powerfulness versus powerlessness, and Activity concerns liveliness versus quietness” (Heise, 2006). The dimensions of Evaluation, Potency and Activity (EPA) characterize the variety of contrasts and matters of degree humans are able to differentiate, represented symbolically through language. The EPA dimensions represent shared sentiment shaped through social interaction with others, arriving at culturally

shared affective norms for concepts, with many sentiments learned during the process of language learning (Heise, 2006). While cultures may differ in their sentiment towards one concept or another, these dimensions are universal and are comparable in every culture (Heise, 2010).

A curious dilemma arises regarding the feeling typically expressed about one's own feeling state, which Barrett (2006b) conjectured is described by the two universal dimensions of core affect, valence and arousal, analogous to the Evaluation and Activation dimensions of the EPA, measuring unpleasant versus pleasantness and activated versus calmness, respectively. But what of EPA's Potency dimension felt in self? While potency can be sensed internally, it isn't frequently used to describe feeling states unless especially salient for the situation, e.g. try asking a powerlifter how they feel after lifting several hundred pounds or how a bed ridden patient feels, both contextualized by special circumstances of the situation, in which potency is salient.

The SD measures the feeling of external things, of which potency is a salient dimension of perception, likely the result of the constant search to glean information about potent and potentially dangerous stimuli from the environment. Importantly, the EPA dimensions of potency and activation are characteristics of the stimuli observed, while evaluation is appraised by the observer, not inherent in the stimulus (Kemper, 1978). While we experience the world cognitively through facts (via linguistically mediated thought), our social perception processes affective information implicitly gleaned through socially transmitted affect, physical attributions, and situational cues "to give us a feeling of confidence about those facts" through Core Affect (Barrett & Bliss-Moreau, 2009: 178). Evaluations of external stimuli must be inferred by the observer automatically by the Social Engagement system, resulting in automatic adjustments to one's moment by moment processing of another's affective cues (Schoore, 2000).

The EPA dimensions of affect apply not only to semantic meaning, but also to concepts in other sensory modalities that have been tested using Semantic Differential rating scales. Studies using SD-like bipolar scales to measure affect found similar EPA-like dimensions in visual perception of line drawing (Suzuki, Gyoba & Sakuta, 2005) and textures (Liu *et al.*, 2015); auditory perception of music intervals (Costa *et al.*, 2000); olfactory perception of odors (Dalton *et al.*, 2008). Using factor analysis with results similar to the SD, the Evaluation dimension typically accounted for the largest dimension of variance, although factors corresponding to Activity and Potency varied depending on

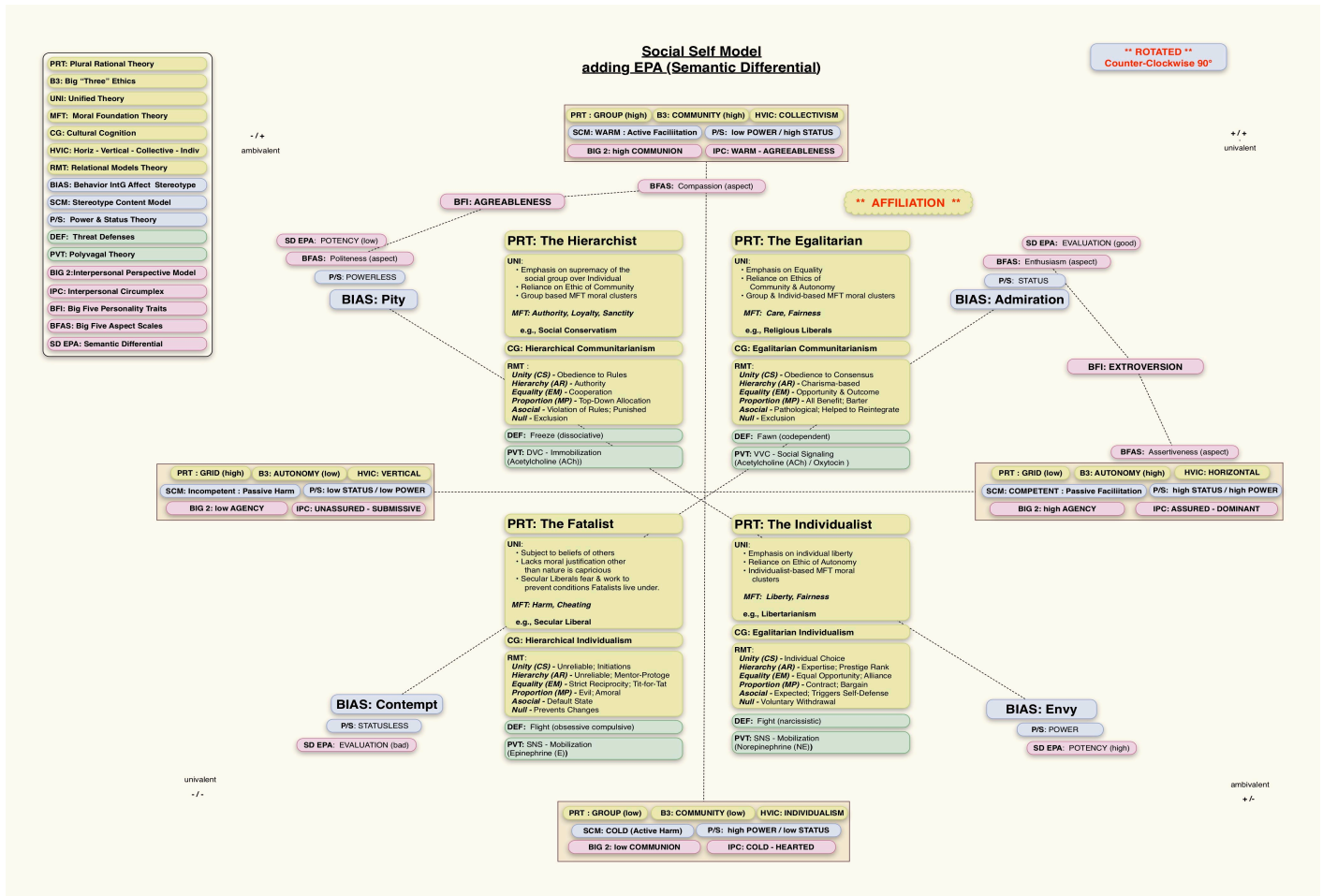
the modality. The olfactory modality scored Potency as the second greatest factor of variance, which can be accounted for by the impact of particularly pungent or fragrant odorants on affect (Dalton *et al.*, 2008). Auditory discrimination in affective space typically identified Activity as the second dimensional factor (Costa *et al.*, 2000). It seems the physical properties of different modalities can contribute to different constraints in the EPA meaning space, likely reflecting the sensitivity of different brain regions to sensory input modulation depending upon modality.

At the heart of bias in social perception seems to be the dichotomy between inferences made about one's self and about other's self. Core affect is available as a feeling state for self-awareness appraisals measuring level of activation and how good or bad that is interpreted, based on the situational context. Core affect provides a global measure towards understanding how one feels and how that may influence behavior, decision making, emotional reactivity, etc. In many cases, core-affect may not even reach awareness, yet have an effect on behavior causing much of the ambiguity or consternation in social behavior and the rumination afterward in order to seek understanding. In the case of self-awareness of core affect, it acts as a situational effect that contextualizes behavior, such as how having a cruddy day can affect can be an excuse for one's negative social disposition. However, the perception of other's behavior does not include access to their valenced feelings, but must be inferred through observation of their behavior and the situation. Typically, people tend to attribute others' behavior as due to internal dispositions, rather than to contextualize on the situation or on their own feeling state (Fiske & Taylor, 1991).

The social perception of others, measured through the SCM's dimensions of warmth and competence have been found to be systematically related to EPA dimensions (Kervyn, *et al.*, 2013). SCM's dimensions both have aspects of Evaluation since "it is better to be competent than incompetent, and it is better to be warm than cold" (Kervyn, *et al.*, 2013). However, Evaluation was found more closely related to Warmth, whereas Potency is more related to Competence than negative Warmth. Abele & Wojciszke's (2007) research shows social perception is biased towards reading Warmth of others while biased towards Competence when judging self, precisely the bias that would come from having internal access to valence of self-feeling, but wary of evaluation of others. While the SCM to SD dimensional mapping isn't a perfect diagonal, their systematic relationship is established (Kervyn *et al.*, 2013).

Fiske's (2013) study also found that inferences of others creates biases matching the EPA relation to the SCM dimensions. A compensation effect centered on the EPA Potency dimension exists, meaning when two groups are compared, the group with more Competency in SCM terms, Potency in EPA terms, is judged to be less warm (Kervyn *et al.*, 2013). Conversely, it found a negativity effect on the Warmth dimension, which means that a negative indication of non-warmth weighs heavily (Kervyn *et al.*, 2013). These effects are important for detecting social deception, since more heavily weighing displays of non-warmth provide a more likely instance of persons engaged in deception since most warm people are rarely non-warm. Similarly, it's difficult to fake competence, so positive displays of competence weigh more heavily than incompetence, which everyone from time to time displays.

The Activity dimension correlates with neither Warmth nor Competence, orthogonal to both on the SCM plane (Kervyn, *et al.*, 2013). In social perceptual terms, "activity items picked up on more physical features of the groups' stereotypes and not on the stereotypes of personality" (Kervyn, *et al.*, 2013). Activity is thought to relate to the instrumental or task activity of technical work rather than social relational (Kemper, 1978). Since activity is orthogonal to both evaluation and potency, activation is orthogonal to the Social Self Model, meaning that Core Affect's evaluation and activation dimensions make up a plane orthogonal to the Social Self Model, coincident with the evaluation diagonal, while a similar Potency and Activation plane lies orthogonal to the Social Self Model, coincident with the potency diagonal, with each of these planes being orthogonal. Thus each sub plane is composed of two dimensions of EPA. In the case of Core Affect, missing is the physical attribute of potency since it is an internal feeling state, while in the case of social relational evaluative plane, missing is activity divorced from feeling.



**Fig. 19.3** - The Social Self Model plus Semantic Differential EPA - *Source: (Fiske et al., 2013)*

The SCM's orientation towards EPA's Evaluation and Potency dimensions is not surprising given evidence from the BIAS emotions directed towards group types. They are signature emotions felt from appraisals of Warmth and Competence (Cuddy *et al.*, 2008). The orientation of Evaluation and Potency match the psychological and physiological implications of the growing Social Self Model of Theories map in **Fig. 19.3**. Positive Evaluation is found in the upper right quadrant, producing Admiration for groups and individuals sensed to be Competent and Warm. Strong Potency is found in the bottom right quadrant, producing Envy for groups and individuals sensed to be Competent and Cold. Negative evaluation (terms like bad, dirty, sad) lies in the bottom left quadrant, producing Contempt, while the upper left's negative potency yields an emotion like Pity. The BIAS emotions discovered in social cognition judgments match, both in kind and in orientation on the Social Self Model (See **Fig. 3.5**), those first order emotions can trigger in their emotional directed targets second order emotions of Pride and Shame (cf Fessler, 1999).

The emotion labels used to stereotype groups (and individuals) through social perception align to the universal dimensions of the Social Self Model, oriented systematically with the SCM dimensions of Potency and Evaluation, with the Activity dimension projecting orthogonally to the Social Self Model, correlated along the Potency axis in a third dimension (Morgan & Heise, 1988)(Kemper, 1990). This provides some evidence that the orientation of affective dimensions of semantic meaning of emotions align with the orientation of ANS emotion subsystems of the Social Self Model. The 2-dimensional autonomic functional surface shows an orientation of different ANS modes along diagonals which may provide a way to orient specific ANS co-activation with the affective dimensions of Potency and Evaluation.

EPA dimensions may represent a cognitive representation the internalized affective “settings” of external concepts related to all symbolic information used in social communication. Thus, in effect, the “information” exchanged in social communication is mapped in the body, with the 3-tiered Polyvagal system most prominent in affect communication and the ANS central in producing it. Similar to how the brain creates a mapping of the sensorimotor systems in the sensorimotor cortex, the body maps the world in the body, tagging all semantic concepts with affective dimensions, of which EPA are those which are found to be universally significant. And this affective information is what’s exchanged in social interaction, picked up by the social communication peripheral systems and processed in the OFC executive controls. In effect then, our body is our social mind.

The idea is that each emotional subsystem of the ANS contributes state information via the vagus nerve to the OFC for cognitive modeling and integration with higher level exteroceptive and interoceptive information where affective information is imprinted on cognitive content, stamped with each’s own specialty information for threat assessment (Schoore, 2007). Each of the EPA dimensions map to one of these ANS tiers. Evaluation, corresponds to the lowest level, oldest part of the ANS mediated by the Dorsal Vagal Cortex and brain stem, contributing essentially a (gut) rating of good or bad. Potency is measured by the activation of the SNS, which determines arousal for fight or flight based on the “potency” of stimulus from the environment as compared to Self. Activation would be controlled by the VVC controlling the inhibition of the SNS via the vagal brake and thus level of arousal, especially with regards to threat or security, in order to meet the activity of a threat. Since the VVC and DVC are part of the parasympathetic nervous system, their contributions to EPA (Evaluation and Activation) model the two dimensions of Emotion, hedonic valence and intensity

respectively. Their neurophysiological differentiation during the evolution of the VVC saw the increased salience of the Activity dimension, where the ability to distinguish between affect increased in humans, while also having an effect on the potency dynamics of dominance vs. vulnerability.

The stream of data sent from the heart up the myelinated vagus nerve is parasympathetic information used by the executive controls (OFC) to model Self and Others, associating internal and external affective content modeled in our ANS and associated with all cognitive content. The three subsystem states would be imprinted on each and every chunk processed by the executive controls along these dimensions, with that affective information serving as reference for future prediction and planning of ANS activation. It is precisely this system which drives behavior, which for humans, gave us incredibly detailed control of our affective states once we were able to differentiate between states due of our ability to symbolically reference behavior with emotion displays through language.

In actuality, this Semantic Differential's three EPA dimensions and the ANS' three subsystems are a simplification, as these spaces are continuous, not distinct segments. So the mapping of ANS subsystems in **Fig. 9.9** doesn't map to particular quadrants, but represents a complex co-activation space across the four quadrants which produce the EPA mapping (and subsequent pattern of 2 dimensions), which we perceive of as a set of fuzzy categories. There may be many dimensions of affect associated with concepts, but only three are statistically discernible through language, just as there are not three states of the ANS but a continuous set of states across a 2-D surface, likely including input from not simply the VVC, SNS and DVC, but other internal organs and systems. It's like an orchestra of affective information played by the body that's sent up for processing in the brain, with only the major sections are discernible by the "conscious" cognitive ear. Yet, the brain is able to take all input into consideration when anticipating the next orchestral movement.

## CHAPTER TWENTY

### Affect Control Theory

*“affective meanings of social concepts provide an implicit cultural knowledge base from which social perceptions, emotions, and actions are generated without need for resource-intensive cognitive processing. By seeking to align their behaviors with the affective meaning of situations, individuals automatically reproduce cultural norms in social interaction.” Schröder et al. (2013: 3)*

Affect Control Theory (ACT) combines a cybernetic control theory with symbolic microinteraction, positing that social interaction is influenced and adjusted semi-subconsciously by control processes monitoring feedback from impressions of social events, such that behavior is directed to align impressions of aspects of events towards fundamental sentiments. ACT is a well studied, sociological mathematized model (cf Heise, 2006) of social interaction that explains the psychological & behavioral functioning of Power and Status relations while being able to describe social identities, institutions and social structure as well as self-sentiment and emotions. ACT includes an empirically tested simulation software (INTERACT) able to predictively explain behavior, showing how feelings are generated from social actions, and also how effects arise from the simulation which mirror psychological processes (Heise, 2006). ACT has been described as “the most methodologically rigorous program,” the “best developed empirically applicable cybernetic model in the history of theoretical sociology,” and “a rigorous methodology for modeling emotion and interaction” (Heise, 2006).

The Control Theory aspect of ACT provides a model of an automated, implicit process instrumental in the maintenance of social behavior. ACT proposes an Affect Control Principle in which actors in a social situation seek to reinforce their identities by maintaining Transient Impressions, or how closely one’s situational identity matches one’s Self-evaluated fundamental identity, that are consistent with culturally defined fundamental sentiments (Robinson *et al.*, 2007). They do this by constantly monitoring the social environment, including their own action, for affective signals via



social communication and making micro adjustments to behavior to maintain an impression matching the shared meaning of a situational identity.

The concept of control system is embedded in the functioning of biological systems which are composed of hierarchically nested control systems (Powers, 1973). A control system operates analogously much like a thermostat, which monitors temperature, activating heat (or air-conditioning) once a threshold has been crossed, repeatedly checking temperature until the threshold is regained, finally turning off the heat (or air). Instead of a thermostat monitoring temperature, ACT's control system monitors and regulates the "gauges" of affect related to every aspect of a social situation and activates different behavioral routines to adjust behavior should changes in affect indicate straying from a threshold of behavioral expectation. These thresholds of expectation are defined by the identity, role and situation of the interaction. Instead of temperature being the metric of measurement, ACT uses self-sentiment, essentially the degree to which our identity, role and relationship with another person agrees with our internal model of Self.

The Symbolic Interaction (SI) aspect of ACT follows from the Sociological origins of the theory, where SI forms a main theoretical sub discipline in Sociology pertaining to microinteraction. It is the perspective that people's actions towards things are based on the meaning arising through the social interaction with others and adjusted through the process of interpretation (Blumer, 1969). SI implies that our behavior is not necessarily behavior due to psychological properties of the self, but the result of an actor's interpretation of the meaning of a situation, where gestures (words or behaviors) becomes symbols conveying meaning (Robinson *et al.*, 2007). Rather than social interaction being a medium through which people's actions pass, it is itself "a process which *forms* human conduct instead of merely being a means or a setting for the expression or release of human conduct" (Blumer, 1969:8).

ACT posits that Symbolic Interaction occurs not at the cognitive level, but the affective level, that meaning is conveyed affectively through symbolic communication. "Affect control theory makes the control of *affect* the key feature underlying social life" (Robinson *et al.*, 2007). ACT maintains that emotions serve not simply as signals, but are used in order to maintain situational self-identity, both in automated "routine role-taking" and in creative "non-routine" ways (Robinson *et al.*, 2007). Semantic labels describing symbolic identities (e.g., parent, actuary, car thief, senator) and role-

actions fitting those identities (e.g., instructs, plays, alienates, earns) have affective meanings which guide the control process in selecting behaviors which “feel” most closely aligned with behaviors matching the identity. Negative impressions occur when behavior differs from socially defined norms producing stressful negative emotions and a feeling of disconfirming identity, while impressions matching fundamental sentiment produce positive emotions, confirming identity and causing events to seem fulfilling.

ACT also expands upon the theories of face-to-face microinteraction described by Goffman’s (1959, 1967) ethnomethodological studies. Goffman’s “expressive order” or face, presented within social interaction, is maintained in coordination with the group, where all actors conspire together to enact events which confirm their social identities relative to a situational frame. Non-verbal and verbal emotional cues inform actors of role-performance and allow for behavior to be adjusted to cover for errs, slips or gaffes, which regulate social interaction (Goffman, 1959). Cooperation is generally attempted to minimize disconfirming behavior for all actors in the event (Goffman, 1959). ACT broadens the concept of face to that of situational identity, which is inferred by actors and performed during interaction. ACT also brings from Goffman’s studies the ideas of institutional influences on behavior, which can result in disconfirming impressions due to having to conform to institutional identities not matching self sentiment.

*“Cultural entities are internalized in people’s minds not only with cognitive meaning schemes, but also with affective associations that vary along three bipolar dimensions: goodness versus badness, weakness versus powerfulness, and quiescence versus activation; and the affectivity of cognitive concepts is the foundation of individual motivations in interpersonal and institutional activities.” Heise (2010: 24)*

Individuals engaged in face-to-face microinteraction aren’t simply unbounded in their behavior, but guided by socially learned meanings of person types, roles and behaviors characteristic of those types, social norms guiding that behavior, as well as situational aspects which either add or subtract certain features of interaction, all of which are interpreted by social actors during interaction. This meaning is acquired through sentiments learned via interaction with close others, strangers in public, the media, dictionaries, etc, all of which establishes a cultural medium of shared meaning (Heise, 2006). ACT essentially posits that this process is mediated by an automated control process guided

by symbolic meaning in order to confirm the sentiments we have about the identities of ourselves and others fitting the current situation. Or to put it more simply, we act out a situational identity which reinforces our sense of self and feel negative emotions when our role-enactment proves inauthentic for the situation.

To explain ACT more fully and concisely, MacKinnon (1994) offered a set of propositions defining ACT that explain the general framework.

### **Affect Control Theory Propositions**

#### **Symbols, Language and Affective Meaning**

- 1- Social interaction is conducted in terms of the social cognitions of interactants.
- 2- Language is the primary symbolic system through which cognitions are represented, accessed, processed and communicated.
- 3- All social cognitions evoke affective associations.
- 4- Affective associations can be indexed to a large degree on universal dimensions of space.

#### **Cognitive Constraints**

- 5- Events are constructed in the framework of a definition of the situation that establishes the identities of participants.
- 6- Grammatical structures of various kinds constrain event construction.

#### **Affective Response Control**

- 7- The Affective Reaction Principle: People react affectively to every social event
- 8- The Affect Control Principle: People try to experience events that confirm fundamental sentiments.
- 9- The Reconstruction Principle: Inexorably large deflections instigate changes in the sentiments which are being used to appraise the meaning of events such that the new sentiments are confirmed optimally by recent events.

#### **Event Assessment**

- 10- Events are recognized within the framework of a defined situation.
- 11- Grammatical structures constrain event recognition.
- 12- The likelihood of event interpretations is inversely related to the affective disturbances they produce.
- 13- The perceived likelihood of events is inversely related to the affective disturbances they produce.

#### **Event Production**

- 14- A person develops actions by employing situational identities of self and other as actor and object.
- 15- Actions are produced within the constraints of relevant grammars.
- 16- The likelihood a person will engage in one feasible behavior rather than another is inversely related to the affective disturbances which the behaviors produce.
- 17- In the course of validating social identities, people engage in role appropriate acts.

#### **Emotions**

- 18- The Emotion Principle: An interactant's emotion following an event reflects the outcome of the event and also the identity that the person is maintaining. Specifically, the emotion is a function of the transient impression of the interactant that was created by the event; and the discrepancy between this transient impression and the fundamental sentiment associated with the interactant's situated identity.
- 19- People tend to maintain emotions that are characteristic of their salient identities.
- 20- Emotion displays facilitate intersubjective sharing of definitions of situations and of the operative social structures that are implied by definitions of the situation.

#### **Cognitive Revisions**

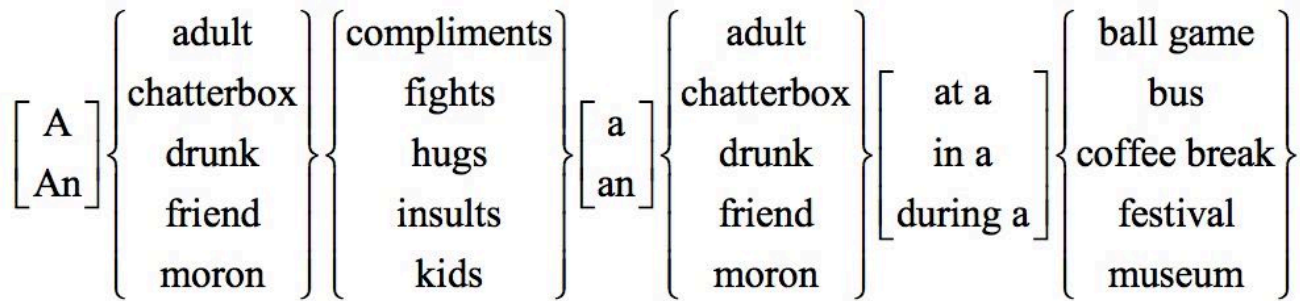
- 21- Social labelings render past events more credible by assigning interactants new identities that are confirmed by past events.
- 22- Dispositional inferences render past events more credible by assigning interactants modified identities that are maximally confirmed by the past events.
- 23- Dispositional inferences are more likely forms of re-identification than assignment of new identities through labeling processes.
- 24- Observers forego reassessments of an actor's character after disconfirming events if the person's emotion displays are appropriate to the person's conduct.

**Fig. 20.1** - Affect Control Theory Propositions - *Source: MacKinnon (1994)*

To sum up **Fig. 20.1**, Social Cognition guides social interaction and produces affective associations (EPA dimensions) between social perception and behavior. Situations help establish social actor identities, which are constrained by language and culture. People react affectively and try to confirm self-sentiments about themselves in social interaction. Large differences in self-sentiment and

transient feelings can cause how people make meaning of events. Situations define the meaning of events, whose interpretation (or even perception) can be disturbed when affect is dramatically more negative than expected, something called deflection. Social actors define social actions according to the situation establishing identities of Self & Other and engaging in actions which confirm those role-identities. Protection against deflection guides behavior, as actions are chosen which minimize affective disturbances. People attempt to engage in role-performance to validate cognitively and affectively salient role-identities. Role-performance produces transient emotions, which can have discrepancies from self-sentiment, resulting in reinterpretation of role-identity or situation. People tend to maintain emotions which match their role-identity. Emotions act as signals confirming role-performance and similar definition of the situation. Social labels and inferences reinforce past events by reassigning modified or new identities confirmed by past events.

ACT models the interpretation of actions and the resultant emotions produced, which can even be strong enough to change our basic assessment of others, situations or behaviors. ACT is modeled by creating a Frame describing all the components of a single social action, with actor, objects of action (other actors), setting, modifiers and social action. These components come from a dictionary of words of a cultural group tested via the Semantic Differential having corresponding EPA values to be used in the computations. A frame combines these components into a parseable sentence, which explains a social action. An event would be a collection of frames describing the social actions of actors which can cause effects to the EPA values of their identities, impressions and emotions over the course of many social actions during an event. During the process of impression formation, the affective meanings (EPA values) of actor, behavior, object and setting are combined and new meanings emerge (Heise, 2006). ACT computes these using empirically based impression formation equations, where in a series of interactions, computed post-action values are recycled and influence pre-action values for the next iteration. ACT's predictions come only from calculations done on EPA values for identities, behaviors and emotion words. "INTERACT's knowledge of human emotion is derived only from these affective inputs, the impression-change equations, and the theoretical model" (Smith-Lovin, 1990: 251).



**Fig. 20.2** - Affect Control Theory Action Frame - *Source:* Heise (2006)

The combination of an actor, behavior, object and setting yields an action frame (**Fig. 20.2**), which can be seen as being plausible, common or implausible. Plausibility can be attributed to how much deflection is produced by an action, that is, how likely would it be for an identity to engage in that role behavior given the situation. Deflection is determined by sort of adding up all the components in a frame (their EPA values in affective space) and computing their mean distance (essentially how closely related affectively), which results in larger deflection the farther away concepts are.

Building a few examples, “A friend complimenting a friend at a coffee break” would have very little deflection, since the affective values for those action components are close together in EPA space, and to the “ear” sounds perfectly plausible and expected. “A friend fights a drunk at a museum” seems implausible since there seems a mismatch between interactants, the behavior and the setting, which are far apart in EPA affect space. A “fight” and a “drunk” (both BAD, POTENT and ACTIVE) would be far from “friend” and a “museum” setting (GOOD, PLACID, and QUIET) in affective space, which our social inferential system registers as implausible, and which ACT’s impression formation equations would register high deflection.

**EPA profiles for scenario identities and behaviors**

U.S.A.				Germany			
Concept	E	P	A	Concept	E	P	A
manager	0.6	1.3	0.1	Manager	-0.3	1.6	1.7
advisor	1.0	1.3	-0.7	Berater	1.3	0.8	-0.5
quiz	0.5	1.0	0.3	ausfragen	-1.4	0.2	0.2
inform	1.2	1.1	-0.1	informieren	1.5	0.5	-0.1
cross-examine	-0.4	1.8	1.1	ins Kreuzverhör nehmen	-2.5	1.4	1.8
cajole	-0.6	0.1	0.9	beschwätzen	-1.7	0.3	1.7
reprimand	-0.1	1.4	-0.3	tadeln	-1.8	0.5	0.5

**Results of American and German Simulations**

Manager's action	U.S.A.					Germany				
	D	Emotion	Re-identification			D	Emotion	Re-identification		
quiz	1.7	none to charmed	0.2	0.6	0.5	3.7	grollen resentful	-1.7	0.2	0.2
cross-examine	6.3	angry	-0.7	1.4	1.1	9.7	unbefriedigt dissatisfied	-2.4	1.2	1.7
reprimand	8.9	none to angry	-0.3	1.2	-0.1	10.7	angstlich anxious	-1.9	0.5	0.5

**Fig. 20.3** - Affect Control Theory EPA Values over Several Actions -*Source:* Schneider & Heise (1995: 11-12, Table 1 & 2)

**Fig. 20.3** shows an example of two sets of Action Frames simulated for identical US and German identities and a series of five role-behaviors (quiz, inform, cross-examine, cajole, reprimand) between the two identities for a particular scenario. The EPA values for each component are listed in the upper table and are plugged into the ACT impression formation equations to produce Deflection scores (D) and resulting emotions (with EPA values) for each action. Dictionaries of identities, role-behaviors, settings, and modifiers have been produced in 30 different cultures, with the EPA values for each representing the affective meaning of the terms for that culture. Cultures differ in the weight in which they value different aspects (concepts) in social life, reflected in differences between particular EPA values resulting in different sets of emotions and impressions (degree of deflection)

produced by similar contexts. In a this occupational comparison, an exchange between a Manager and Advisor creates different reactions when comparing US versus German workers. This example scenario, a German manager ends up having stronger, more negative feelings from having to quiz, cross-examine and ultimately reprimand an Advisor, as compared to an American counterpart, pointing out the differences in occupational culture (Schneider & Heise, 1995; see also Heise 2010). ACT's modeling of emotion generation across a large dictionary of role-identities provides a systematized and methodologically sound way to explore the differences between cultures & the inner working of social behavior.

Social actions can be thought of as situational, in that they include some ambiguity that is determined by how others perceive the action. The subtle differences between simply the words we use to discriminate between all the labels of social action shows how many ways things can be perceived. When there are differences between the understanding of an actor's social action and the sentiment for the actor, it can create a post-event impression that goes against sentiment for the actor. This can create negative emotions or even affect identity if the deflection is great enough. Acting against type or situation can produce big differences in EPA space, increasing deflection, corresponding to the production of a more strongly valenced emotions as a result of disconfirming interaction.

During each social action, the process of impression formation can have effects on components of the frame which register as transient feelings. Different effects which mimic psychological processes have been discovered through modeling (Heise, 2006), with "many 'predictions' correspond(ing) to important insights by other researchers" (Smith-Lovin, 1990: 250). Stability effects preserve the degree of EPA values for persons, settings and behaviors generally, where good actors remain good regardless of behavior and vice versa for bad actors. Behavior effects amplify EPA values and reinforce impressions, such as when good actors performing good actions make them seem more good, or powerful actors engage in powerful actions increase their power, or lively actors' lively activity to seem more lively (even contributing some to power). Being the object of an actor's action tends to diminish EPA values (Object Diminishment), making them less good, less potent, less active. Consistency effects cause changes to feelings when two components in the social action aren't consistent (mismatch). Congruency effects are more complex, but explain effects as different as Mercifulness, Sycophancy, Righteousness, Impertinence. Balance affects consistency when the

components of a frame are all of the same valence (positive or negative). And State of Being effects describe the identity action that serve as labels or shortcuts to moods, character traits, moral conditions, which typically have more of an effect on impression than the identity alone. (all Heise, 2006).

These effects demonstrate how and why structural components of social interaction produce certain types of emotions and behavior. Seeing the relations between actor and behavior from one's point of view, given the affect involved, show how biases work corresponding to certain mental processes which cause us to weigh one component or set of components more heavily during impression formation and in essence, during emotion production. Affect Control Theory's model of social interaction can be integrated with the theories and models covered by the IToCE to explain the both the management and production of emotion.



# CHAPTER TWENTY-ONE

## Affect Control Theory & Emotion

*“Those who hold sentiments associated with a dominant ideology and culture experience the proper emotions without regard to feeling rules or norms. Feeling rules are a means of controlling those who do not maintain the ideologically appropriate meanings. In a sense, all of ACT’s predictions about emotions define norms since they are the responses generated by consensually held meanings.” Smith-Lovin (1990: 254)*

Affect Control Theory offers a model of emotion combining both positivist and constructionist theories of emotion, competing paradigms seemingly describing complementary aspects of emotion in either the production or management of emotions, respectively (MacKinnon, 1994: Ch 7). Across theories of emotion in Sociology, Kemper’s Power and Status Theory of Emotion most closely aligns with ACT’s emotion model, although the Activity dimension is absent in PSToE (Smith-Lovin, 1990). However, where PSToE posits that emotion categories are generated from social structural dimensions mediated by comparisons of Power and Status, ACT models emotions through computations according to congruence or difference in identity impressions and emotions correlated with the affective meaning of identity, action, and emotion labels. In somewhat of an analogy to Barrett’s Theory of Constructed Emotion, ACT constructs emotions from the error calculation between impression formation and foundational self-sentiment along with factoring in situational factors of the event. ACT marries the two approaches in its differentiation of affect influencing behavior and emotions produced from situated identities. ACT also accounts for the roles of both motivation and language in affect and emotion, thereby fusing and going beyond both approaches (MacKinnon, 1994: 149).

ACT’s core emotion model posits “emotions emerge from automatic and unconscious comparisons of the impression of self that have been created by recent events with the kind of person that one is supposed to be in that situation” (Lively & Heise, 2014: 52). ACT models emotions as the outcomes of impression formation in role behavior, representing transient feelings created by role performance

in comparison with long-term fundamental sentiments. The EPA values of the transient impression and the deflection (D) are computed for each action frame, with very low deflections representing confirmation of one's situated identity, thus the produced emotion resembles that identity's EPA values. However, large deflections represent disconfirming events for one's identity resulting in the emotion produced resembling the EPA values of the transient impression. "Emotions reveal how an individual is faring in an interaction, both absolutely and relative to the individual's (situated) role identity" (Lively & Heise, 2014).

Transient affective meanings change as interaction occurs, causing subtle changes in behavior (via the control process). Emotion dynamics modeled by ACT's equations produce empirically tested results which mirror human emotion generation. ACT posits these emotions are transmitted via subtle social communication cues which individuals can use to guide role performance, each generating emotions in self as feedback of the performance. The affect read from others include first order emotion displays transmitted via social communication, which ACT's impression formation equations model affecting Self's performance. ACT's impression equations compute effects of emotions from others on impression formation, thereby modeling the effect of emotions from emotions. However, ACT doesn't explicitly model second order self-conscious emotions felt by Self's own Self-evaluation from other's emotions, but rather simply from the effects affective meaning has on impression formation.

Each of the EPA dimensions contribute different dynamics to impression formation. Valenced Evaluations depend directly on the transient impression and can produce identity-protective effects. Negative self-evaluations resulting from large deflections can result in adjusting expectations to account for changes in valence. ACT's model accounts for identity changes should deflection prove too great. It can also result in dampening effects if identity already has high evaluation level, since positive emotions are less impactful than for an identity with a lower evaluation (Lively & Heise, 2014). If the fundamental affective meaning for self changes, it can affect identity to come closer to agreement with the emotion and impression being produced. Emotion dynamics exist for Potency, which causes positive emotions when powerful identities are confirmed by exercising power and can be additionally heightened when combined with positive Evaluation or Activity. Similarly, high Evaluation and low activity can spur more potent emotions to compensate. Additional emotion dynamics concerning Activity result from transient comparisons with fundamental activation,

resulting in heightened activation when impression is active compared to the fundamental sentiment.

ACT's production of emotions from social actions make them trait-like, where they can influence the EPA values of identities, actions and events (???). Similarly, ACT also models social categories, with markers in the form of adjectives that can be combined with identities producing effects like decreasing evaluation for negative markers. These can be in the form of identity categories, like gender, race, culture. Different markers then can have differential effects on the same identity, leading to vastly different situational impressions depending on the EPA values of the markers, which when related to a group of markers can result in different cultures or subcultures. Similarly, intersectionality effects can be modeled to see the difference in emotion sets that occur from identity categories be added to traditional identities. Differences between social categories reflect that persons in these categories "occupy different worlds," highlighting that identity is culturally dependent (Lively & Heise, 2014).

ACT also models social norms, which emerge from shared sentiment in the form of agreement of EPA values of affective meaning for identities, roles, role-actions. "People have similar emotion reactions to events because they share affective meanings of the concepts that are deployed to comprehend events" (Lively & Heise, 2014: 58). This allows for the smooth interaction and consistency for expectations. However, when people from different subcultures interact or situations cause different definitions to be made, emotion norm violations ensue. This contributes greatly to the understanding of emotional conflict between rival ideologies, which not simply have different norms, but embody and situate the affective dimensions of language differently. In effect we may be using the same words but with vastly different affective meaning, which can be computed to explain differences in identity, behaviors and emotions.

The effect of the ideological aspect of emotion can cause people whom experience emotion different than commonly held expectations, termed emotional deviance, have two options. Either cover up feelings using emotion management techniques to agree and conform to social norms for emotion display, or feel disconfirmation of identities and behaviors which illicit moral condemnation from those holding ideologically conforming views. ACT's emotion model can inform Emotional Self-Alienation (ESA) (dynamics that are inherently embedded in the language we use to describe

ourselves and our actions. In some sense, the model gives insight into the consensually held meanings we have, which are stored as affective dimensions of meaning relating to how we internalize the world emotionally in relation to our own emotional selves.

Additionally, ACT models emotion management and emotion segue which provides the possibility of decoding how emotion is regulated from threat reactivity to calmness. Research from the study of emotion management reveals that men and women process emotion differently (Thoits, 1990), with women having a far greater emotional “vocabulary” and capacity for emotion, while men’s are more limited (Lively, 2009). Emotion segueing emerged from structural equation modeling to find correlations between emotion pathways (Lively & Heise, 2004). Emotion segues are shortest paths of connected emotions across the emotional 3-D space which allow one to traverse multiple adjacent emotions to arrive at a desired emotional outcome (management). Studies of shortest pathways for common emotion transitions reveal that women and men used different emotion pathways. Results show that women use more emotion steps and more positive emotions traversing their pathways, while men use more negative and fewer steps (Lively, 2009).

Emotion segue holds the potential towards finding specific therapeutic programs which could help people practice navigating out of negative reactive emotion states. Furthermore, the Social Self Model integration of the EPA dimensions would situate emotions within the two universal dimensions (according to EPA value), which could provide a key towards matching emotion to behavior to ANS reaction, potentially mapping emotion pathways to the functioning of the ANS and the Polyvagal system. Since ACT evolved out of the Symbolic Interactionist tradition within Sociological Social Psychology, its congruence with Kemper’s PSToE and Goffman’s emotion management and stigmatization, representing the integration of Constructivist, Positivist and Dramaturgical emotion theories, meaning this could serve to unify emotion theories covering not simply the Social, but also the Psychological, Physiological and Cultural realms as well.

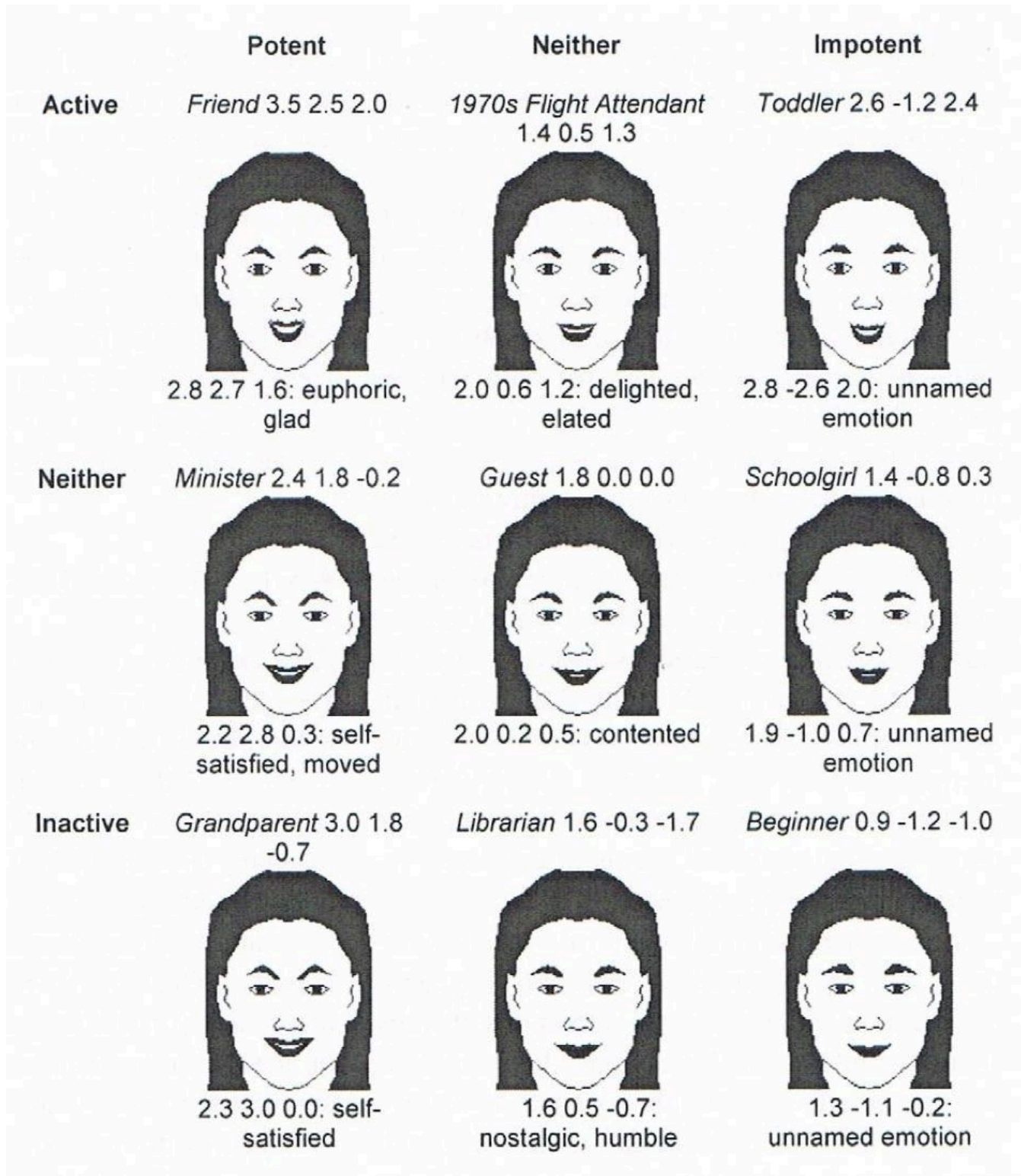
ACT’s INTERACT software has already confirmed aspects of other theories from within Psychology. Findings by ACT reaffirm psychological evidence that people are guided along Social Cognition lines of behavior. The threat to social status, which Kemper (1978) posits is what’s behind emotion production, creates behavioral biases towards status conflict with others. Experimental evidence mentioned above confirms this behavior, as “people who are upset magnify differences in their

friendliness toward esteemed and disesteemed partners” (Wiggins & Heise, 1988), similar to the SCM’s BIAS emotions, which “are the proximal cause of social behaviors” (Cuddy *et al.*, 2008:71).

Essentially, negative information about a Group (or person) considered to be Warm can have a disconfirming effect that changes opinion and decreases the sense of their warmth much more so than positive information would increase opinion (Fiske, 2007). Anyone can be warm, but warm people or groups are rarely if ever cold. Similarly, competent groups or people can come up with brilliant insights, but the incompetent rarely do, while dumb behavior can come from anyone at times. Fiske’s study makes the leap that it is in fact EPA’s Potency dimension that explains these two effects together. In terms of risk, it’s wise to weigh negative information more heavily about those we trust to be safe or positive information from those we trust to be smart than the reverse, since disconfirming evidence of either can reveal a mistaken idea about someone else, which if we err increases risk. Both of these findings also reinforce the idea that information that would help us detect cheaters in social relations would be advantaged.

ACT’s INTERACT program for simulating social interaction provides a model that could also be used to instruct and confirm these findings, especially if social structural rules were integrated into the modeling. The simulation is driven by the affective meaning of words, rated along EPA dimensions and used in equations that compute the closeness in EPA space and thus likelihood of social consistency, for if not, it causes deflection. Essentially, ACT models the shared system of meaning and shared intention via the cultural commonality of EPA ratings, using them to compute emotions resulting from interaction. Additionally, INTERACT can function with language datasets from other cultures to show how cultures comparatively value identities, behaviors and emotions. It provides a predictive cybernetic model for human interaction and a framework for testing the Power/Status Theory of Emotion. The IToCE posits the ACT model, in effect, represents the best implementation of simulating of human behavior, generating of emotion from structural components and computing the course of constructionist emotion management.

Additionally, INTERACT provides hypothetical facial expressions representing different emotional states based upon the EPA coordinates of generated emotions resulting from a social action.



**Fig. 21.1** - EPA Emotion Visualizations - *Source:* Lively & Heise (2014: 60, Fig 4.2)

*“Facial expressions are formed from the EPA profile computed for an individual’s emotion, according to the following rules: (a) open eyes with positive activity; (b) arch up brow with*

*positive evaluation; (c) raise brow with negative potency, lower brow with positive potency; (d) move mouth higher with positive potency, and move upper lip higher with positive potency; (e) drop lower lip and narrow mouth with positive activity; (f) curve lips up with positive evaluation, down with negative evaluation.” Heise (2006: 140)*

Knowledge of the Affect Control system provides an awareness of a largely subconscious or under-inspected process unavailable from any other source, like peering into the workings of the OFC executive controls at play in social interaction in its integration of affective social signaling from external sources with internal interoceptive affect. The regulation and management of expectation, motivation, behavior, and sentiment and production of impressions and emotion in social action can become something taught to grow emotional and social awareness.

The social action components modeled by ACT (impression formation, identity, emotion) provide a simple model of human social cognition. It is this modeling of social inference which makes Affect Control Theory a prototypical model of social interaction.

## CHAPTER TWENTY-TWO

### Affect Control Theory & Inference

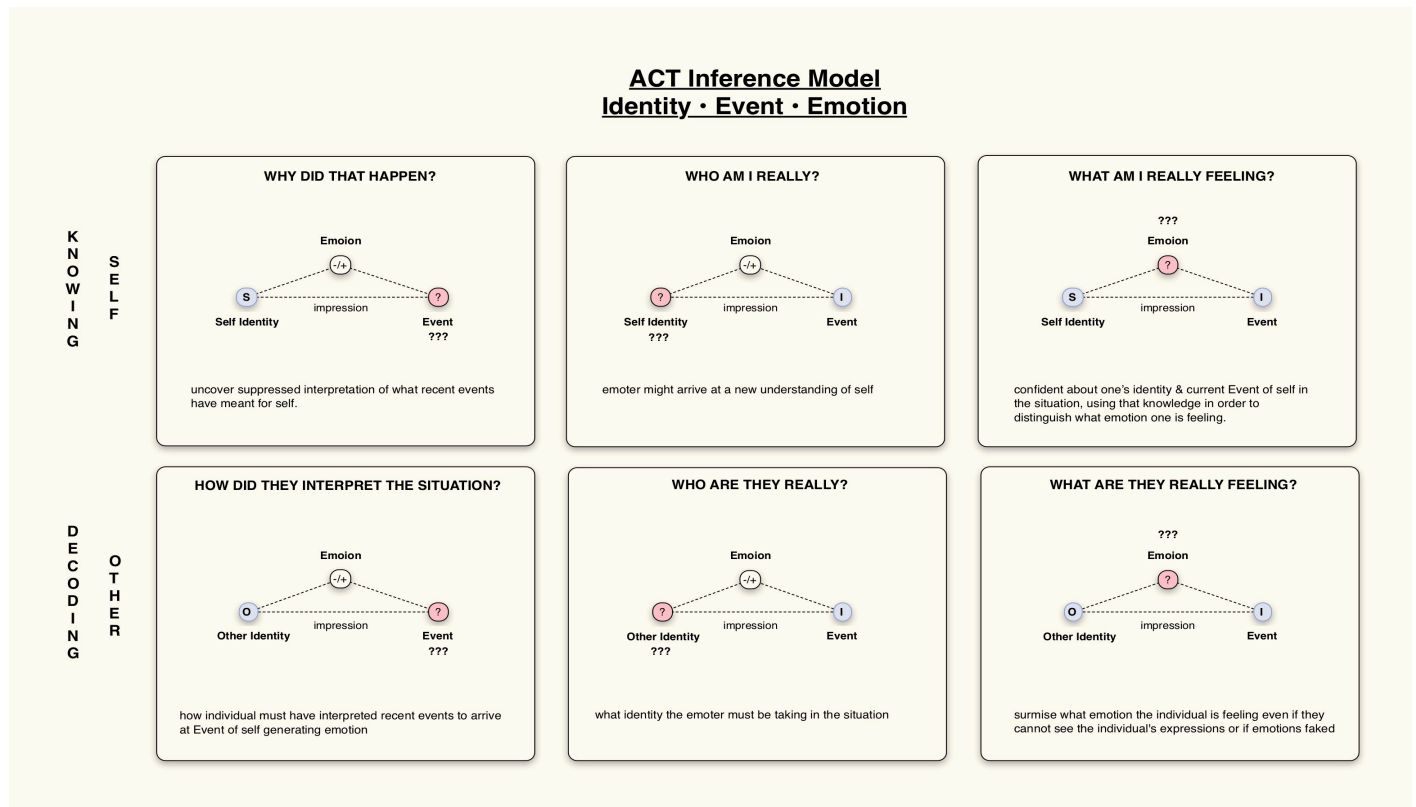
*“We may strongly suspect that there is a universe out there, beginning a millimeter outside of our nervous systems, but our perceptions are not that universe. They depend on it, but that dependance is determined in the brain, by the neural computers which create perceptual signals layer by layer through transformations of one set of currents into another. What might we learn about external reality by learning more about ourselves? What assumptions have we made about reality that are really no more than limitations of our brain?” Powers (1973: 37)*

Affect Control Theory models social action by creating social action frames as inputs, with a social event containing many individual social actions. ACT's INTERACT software processes successive iterations of social action frames to compose an event, computing impression formation for social actors and feeding forward results into the next iteration. The flow of social actions affect the next moment through the generation of emotion reactions to micro-interactional evaluations of indicating “how an individual is faring in an interaction, both absolutely and relative to the individual's role identity” (Lively & Heise, 2014). These are similar to the appraisals of self which Tracy & Robins (2007) posit drives the generation of self-conscious emotions, central to self-regulation of emotion and affect control. However, ACT's inferences model represent ways in which social actors extract information from social action. Social inferences are effortless reading between the lines to understand causation of events, guessing at missing or hidden identity; impression; or emotion in social action. Identity and impression added to emotion provide a trio of components of social action in which we triangulate meaning of the social encounters.

Lively & Heise (2014) outline rules of inference in social action which ACT models. The rules consist of a set of three inferences of each Self and Other, where knowing any two of Identity, Impression or Emotion allows for the inference of the missing action component. The process of social inference produces answers to hypotheses about why something happened (impression), who we really are



(identity) or what are we really feeling (emotion). When directed towards a model of Other, the inferences are about answering how Other interprets the situation (impression), who Other is trying to be (identity) or what Other is really feeling (emotion). ACT posits identity, impression and emotion are deterministic internally (Lively & Heise, 2014), meaning they're processed automatically and unconsciously through an implicit process by the executive controls. Their interpretation at the psychological level can vary since missing information (suppressed emotions or impressions), situational details or focalism (identity), or cultural constraints cause ambiguity (Lively & Heise, 2014). Such cultural constraints can also vary by cultural group or gender or by individual (inferring emotions) (Lively & Heise, 2014).



**Fig. 22.1** - ACT Social Inference Models - *Source:* compiled from Lively & Heise (2014)

The inferences in **Fig. 22.1** represent three sets of meaning extracted from social action that may be filled in by implicit inferential process. These inferences are produced from sentiment unconsciously, rather than through conscious reasoning, although they can be attended to and corrected consciously after implicit inference through self-reflective thought. Knowing two of identity, impression and emotion allow inferring the missing component (???) at various nodes), representing information hidden from the perceiver. These inferences are used to decode the

meaning from behavior of other, or knowing one's own self.

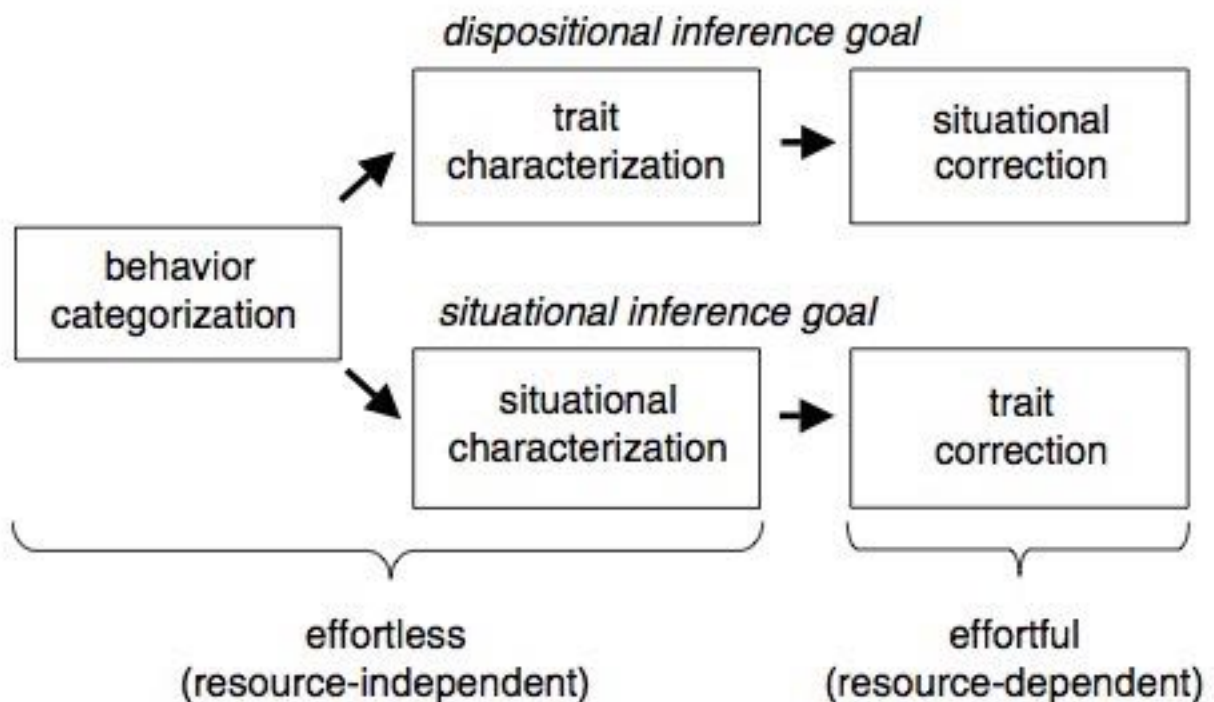
Impression is created from an unconscious comparison of a transient identity (identity within the social action) with an identity standard. Its congruence or divergence produces a positively or negatively valenced emotion produced by the control process as sort of an error correction computation. That transient emotion's valence has some micro-effect on the identity (confirming or disconfirming), which the control process uses in adjusting behavior should the error correction (negative affect) require identity reinforcing behavior, both for the actor's sake while also for the performance for others in identity management processes. The ability to attend to multiple threads of the social performance of Self and Other within the moment of social actions requires attentional and cognitive resources (cognitive load).

ACT's mathematized simulation software computes the impression equations as if these inferences are consciously made, yet, the social inferential process involves implicit processes which guide micro-interaction based on the confluence of identities, behaviors, and emotions sharing similar affective meaning in EPA space. Since ambiguous behavior is more difficult to infer and creates greater divergence of impressions, social actors use social frames for coordinating interaction to go smoothly, often at a subconscious level, although it can also be used strategically (cf Goffman, 1967). These frames organize behavior by matching identities with role behaviors, and the situation is largely defined by the common frame actors share to make sense of interaction, which allows some automaticity. However, ambiguity cause gaps in knowledge, thus the six inferences in **Fig. 22.1** play a role in conscious effort to fill in missing information to make better sense of the action and gain insight into adaptive social interaction.

Explicit conscious contemplation can override and correct implicit inference. The correction model of social inference (Molden *et al.*, 2006) describes the social inferential process occurring over several stages, the first two implicit and quick while the third is slower and requires conscious effort. The first stage produces new social information based on the observation of someone's social action and the **categorization** of that behavior, part of an implicit unconscious process using one of the two implicit theory styles of inference. The next stage, also implicit, involves the **characterization** of that behavior as being either the product of a character trait or due to some situational aspect. It is only the last step, which **corrects** the characterization of the behavior as the result of conscious

consideration of alternative explanations. The corrections model posits the first two stages are effortless, unconscious and very quick (on the order of seconds), while the correction step require cognitive resources and motivation, which is subject to many types of reasoning biases (Molden *et al.*, 2006).

Social inference research reveals people tend to use one of two basic lay theories towards understanding social behavior, called implicit lay theories. So called **Entity theorists** tend to ascribe causation of social behavior to largely static character traits underlying a belief that people's attitudes are fundamentally unchanging. Entity theorists tend to be trait-focused, attending to personality or physical traits of individuals when inferring about social behavior. They seem to pursue a dispositional inferential goal of trying to answer "What type of person is this?" (Molden *et al.*, 2006). On the other hand, **Incremental theorists** ascribe causation of social behavior largely to situational constraints, where attitudes change due to situational influences. Incremental theorists tend to be process-focused on psychological processes of mental states, pursuing a situational inferential goal of trying to answer "What about the situation is causing this?" (Molden *et al.*, 2006).



**Fig. 22.2** - Correction Model of Social Inference - *Source: Molden et al. (2006: 740, Fig. 1)*

Cognitive load has differential effects on the effortful conscious correction stage. These two lay

theory types have been found to maintain a continuous focus during the conscious reasoning stage of the correction inferential model, even when put under cognitive load (Molden *et al.*, 2006). There exist particular biases which preserve orientation, unless the opposing theory is made especially salient and mental resources are available to assess the other theory (Trait vs. Situational). The maintenance of this bias has been ascribed to the building up of practice & skill of either dispositional or situational inference styles, yet, most people possess the ability to evoke either inference type when instructed to (Molden *et al.*, 2006).

However, additional research shows that entity versus incremental lay theories have distinctly different effects on finding meaning in social action, affecting self-regulation, social-perception and social development (Molden & Dweck, 2006). Evidence from a variety of studies of entity versus incremental inference goals having differential effects on protecting self-regard (identity-protection), dealing with depression, attitude towards achievement, self-esteem repair strategies, behavioral dispositionalism, and influence & resistance to stereotype (Molden & Dweck, 2006). Although most individuals display a clear preference for either entity or incremental theory, and may even exhibit differential preference in different domains (intelligence versus personality) (Molden & Dweck, 2006: 194), the two theories show dramatically different responses across the social domain.

In a study of students use of these two lay theories, trait-focused entity theorists tend to compare themselves to other students who perform poorly (self-esteem); allow stereotype threats to be accentuated (stereotype threat); avoid difficult social situations and interaction partners (shyness); increased vulnerability to and dampening effect on coping (depression); intelligence as fixed, decreased setting of goals, effort as negative thing, helpless (view of intelligence); downward trajectory during college (self-esteem management); sees personality traits as fixed, over-attributing behavior to a person's traits (person perception bias); turn attention away from information that went against their stereotypes (applying stereotype) (Molden *et al.*, 2006).

		Entity Theorist – Trait-focused	Incremental Theorist – Situationally-focused
self-esteem	Self-Regulation	comparison to students who performed poorly	comparison to students who performed better
stereotype threat	Self-Regulation	effects of threat are accentuated	effects of threat are alleviated
shyness	Self-Regulation	engage in easier social situations and displayed avoidance behavior	challenge more difficult social situations to increase social skills
depression / dysphoria	Self-Regulation	increased vulnerability to and dampening effect on coping	decreased vulnerability to and energizing effect on coping
view of intelligence	Social Perception	fixed - decreased setting goals, effort as negative thing, helpless	cultivable - increased setting goals, effort as positive & persistence
applying stereotype	Social Perception	turn attention away from information going against stereotypes	turn attention towards counter-stereotypical information
performance in math	Analytical Skill	equal - decreased performance	equal - steadily increased grades
performance of self-esteem	Social Development	downward trajectory during college	upward trajectory during college
person perception bias	Social Development	traits fixed: over-attribute behavior to a person's traits	traits situational: over-attribute behavior to a specific situation

**Fig. 22.3** - Entity Versus Incremental Lay Theories -

*Source:* compiled from Molden & Dweck (2006)

Situation-focused incremental theorists tend to study strategies used by students who performed better than them (self-esteem); allow stereotype threats to be alleviated (stereotype threat); challenge more difficult social situations to increase social skills (shyness); show a decreased vulnerability to and energizing effect on coping (depression); see intelligence as cultivatable, increased setting goals, effort as positive, increased effort and persistence (view of intelligence); upward trajectory during college (self-esteem management); sees personality traits as situational, over-attributing behavior to a person's situation (person perception bias); turn attention towards counter-stereotypical information (applying stereotype) (Molden *et al.*, 2006).

It has also been found that while dispositional inference remains consistent across cultures, situational inference is what varies (Norenzayan *et al.*, 2002). Social attributional lay theories have been studied to try and explain differences in social cognition between East Asian and Western peoples. While Eastern societies tend to favor situationalism and Westerners dispositionalism (Norenzayan *et al.*, 2002), these orientations are also found mixed across persons within those same societies (Molden *et al.*, 2006). Moreover, a great many people from both societies are able to operate in either mode, although tending to favor one implicitly (Molden *et al.*, 2006). Also, those from East Asian societies tend to have stronger beliefs towards group agency and Westerners towards individual agency, both likely cultural level biases (Molden *et al.*, 2006). Dispositional inference tends to be used the same in both East and West when situational cues are absent or ambiguous, although they are qualitatively distinct in that Easterners see personality as malleable while Westerners see it as fixed (Norenzayan *et al.*, 2002).

Core Affect's differential effect of valence and arousal on social focus (Barrett, 1998) may contribute directly to a bias towards either dispositional or situational inferential styles depending upon an individual's leaning towards arousal or valence focus (Feldman, 1995a). Arousal focus describes the influence of arousal on the conscious affective experience, which turns attention inward towards self-feeling. Sensitivity to internal/personal cues are misperceived as confirmation of an implicit attitude (Laird, 2012), decreasing the likelihood of corrective conscious inference and reliance on implicit dispositional stereotypes (Molden & Dweck, 2006). Inability to accurately predict feeling states from

external stimuli (behavior and events) due to self-focus and stereotyped referential models produce predictive error in the form of distressed arousal as stress and anxiety (Garfinkel *et al.*, 2009). Empathic over-arousal induced by viewing another's negative emotion can lead to a stress response and personal distress, which prevents sympathetic intersubjectivity and increases self-focus (Decety & Lamm, 2006). Moreover, intersubjective interaction that could potentially elicit negative emotion and personal distress may be avoided, both consciously and subconsciously, especially if that distress comes from overt or bypassed shame (Scheff, 2001). Furthermore, over-arousal signifies sympathetic arousal, which influences both attitudinal negativity and behavioral avoidance according to the bivariate model of evaluative space and the autonomic covariant functional plan (Berntson, Cacioppo, & Quigley, 1994). Sympathetic activation inhibits the Ventral Vagal Complex (VVC) and the ability to self-regulate, limiting the social engagement system and feelings of trust (Porges, 2001).

Ultimately, these phenomena may all be tied to the neurological constraints of structural and functional differences in the Salience Network's rAI+ACC circuit's connectivity to the amygdala, the default mode network (DMN), and the orbitofrontal cortex & central executive controls (CEN) (Menon, 2015). The Salience Network (SN) is centered on the network model of insula function "implicated in disparate cognitive, affective, and regulatory functions, including interoceptive awareness, emotional responses, and empathic processes" (Menon & Uddin, 2010: 655). The SN's right Anterior Insula (rAI) connectivity analysis has shown a "significant causal outflow" of signals (Menon, 2015: 604) in activating the externally focused attentional CEN and deactivating the internally focused cognitive DMN, as well as switching between networks "across task paradigms and stimulus modalities" (Menon & Uddin, 2010: 661). Furthermore, the rAI shows "significant age-related differences in functional connectivity between the SN and other networks" (Menon, 2015: 604) and hyperconnectivity of the SN with the CEN and DMN is a predictor of autism in children in what's thought to produce "inappropriate assignment of saliency to external stimuli or internal mental events" (Menon, 2015: 605). The functional mapping of distinct large-scale network interactions between the SN routing to either the DMN or CEN may reveal the neural correlates of the opponent control system (Craig, 2008) producing the autonomic bivariate functional plane (Berntson, Cacioppo, & Quigley, 1994).

The switching from the SN to the DMN relies on a short connection from the rAI+ACC controller to the VMPFC and PCC (Menon, 2015). The SN->DMN switch is left hemispherically lateralized,

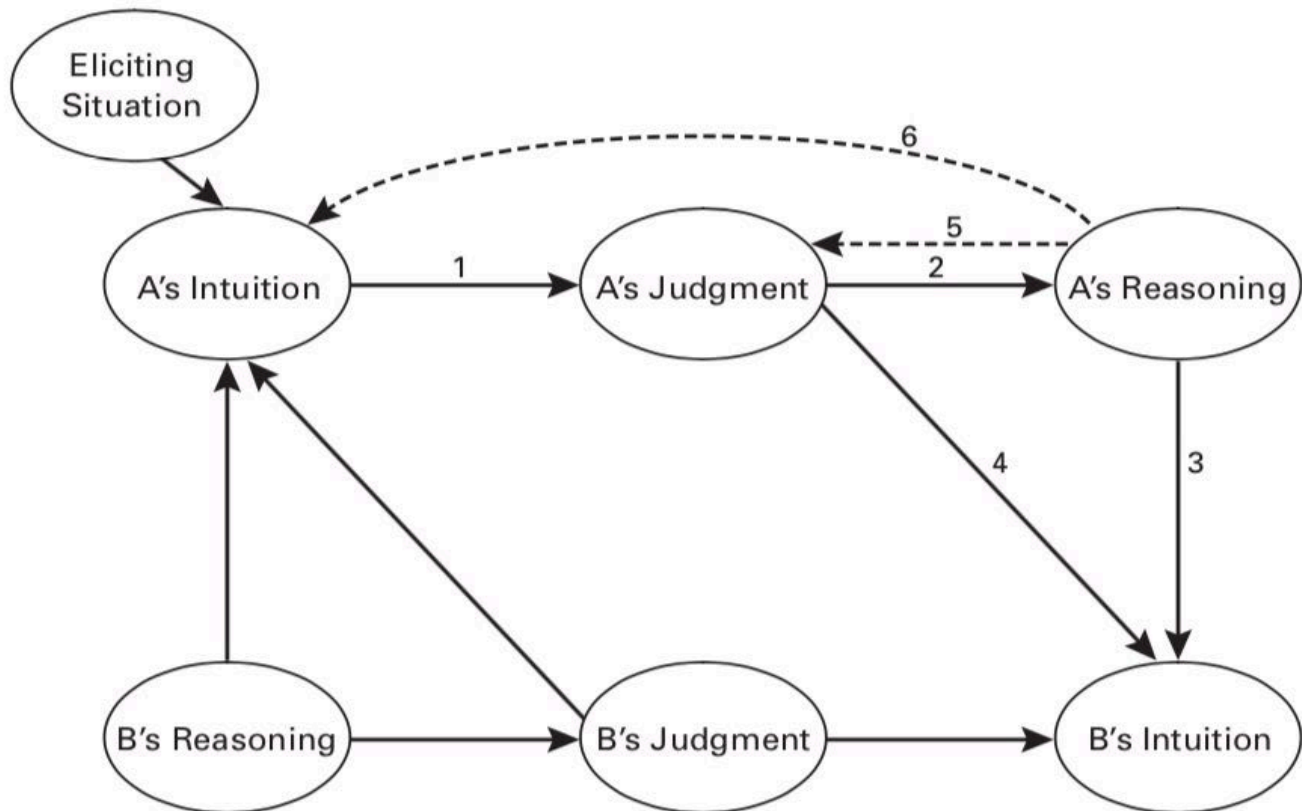
associated with positive emotions; parasympathetic activity; affiliative actions; and energy conservation (Craig, 2008). The main function of the DMN is to deal with internal, self-referential mental events and episodic memory retrieval. The DMN is “anti-correlated in functional imaging studies with the activation in the AIC associated with awareness and task-related attention” (Craig, 2008: 17). The switching from the SN to the CEN relies on the long-distance, rapid relay of signals from the rAI+ACC controller to the rDLPFC and rPPC executive controls via VEN spindle neurons (Menon, 2015). The main function of the CEN is to organize motoric behavioral response to deal with some salient external stimuli. The SN->CEN switch is right hemispherically lateralized, associated with negative emotions; sympathetic, threat-defensive action tendencies; and energy expenditure (Craig, 2008).

Differential connectivity strengths between networks might bias attention to either external stimuli or internal mental events, providing neurological constraints for differences across higher ontological levels. At the psychological level, this could be the source of focus towards external cues (valence focus) or internal cues (arousal focus). At the interpersonal level, this could be the source of other-focused or self-focused interaction. At the social level, this could lead to a bias towards a social relational focus on Status or on Power, with social perceptual biases towards situational or dispositional inferences. At the Cultural level, this could lead to a bias towards preferences for egalitarian (low Grid) or hierarchical (high Grid) social structural regulation. The alignment of phenomena from many different levels of analysis could provide a clearer picture of the effects of neural constraints ultimately having their roots in the connectivity and functional differences of Salience Network. The SN's modulation of expensive, resource intensive effortful processing may ultimately be arbiter of subconscious, implicit forms of inferential intuition and conscious, explicit forms of inferential rationality.

Both dispositional and situational inference can be corrected through reflection, which is thinking about one's thoughts (Sperber & Wilson, 2002). Reasoning is reflective inference, which offers high cognitive information processing involving memory and logic to deduce new information consciously, rather than rely on automatic, intuitive inference (Sperber & Wilson, 2002). Social inference as moral judgment, when inference is used to evaluate behavior as right or wrong according to some virtue, has long been thought to be part of a moral rational reasoning process (Haidt, 2001). The Social Intuitionist Model (SIM) provides a theory that challenges rationalist



models that typify moral judgment as the product of rational reasoning. The SIM posits moral inference is a multi-step process which begins as implicit, unconscious affective processes in which judgments “appear in the mind,” which evoke supporting implicit judgments and arguments (possibly influencing others’ implicit intuitions) only to then be available for refinement by reasoning processes (Haidt, 2001).



**Fig. 22.4** - Social Intuitionist Model - *Source:* Haidt (2001: 815, Fig. 2)

The Social Intuitionist Model (SIM) in **Fig. 22.4** breaks moral judgment down into several links between fast, automatic intuitions and emotions, and slower forms of reasoning. Eliciting events and situations evoke intuitions and emotions making a “sudden appearance in consciousness, or at the fringe of consciousness, of an evaluative feeling (like–dislike, good–bad) about the character or actions of a person, without any conscious awareness of having gone through steps of search, weighing evidence, or inferring a conclusion” (Haidt & Bjorklund, 2008: 188). Those intuitions invoke implicit judgements (link 1) which come to mind as propositional judgments or arguments. These judgments have the effect of evoking post-hoc reasoning (link 2), reasoning after the fact in support of implicit judgments. These judgments also have effects on others’ intuitions (link 4) in the



form of influence or persuasion through social priming effects (Molden, 2014) which operate via affective information received through social communication and modeled in the social engagement system. More time invested propositional reasoning of judgment can reassess these judgments (link 5) to adjust post-hoc reasoning. Self-reflective reasoning (link 6) can affect not simply one's moral judgments, but one's own implicit intuitions (Haidt, 2011). These later self-reflective steps of reasoned judgment take far greater time, energy and intention, analogous to the effortful corrective inferential processes of **Fig. 22.2**. One's own implicit intuitions are also susceptible interpersonal influences from other people's judgement and reasoning, in the reverse links to A's Intuitions, which can be received through discussion or imagined as in the generalized other (i.e. social or cultural influences).

The SIM also captures the social nature of moral judgment, in that the reasoning generated in support of implicit intuition and judgment are used for strategic social purposes (eg. managing one's reputation) (Haidt, 2001). Moral reasoning employed to support the intuitive inferential material serves the purposes of argumentative defense and correction of one's implicit beliefs (Mercier & Sperber, 2011). Moral reasoning is the ability to represent inferential representations as premises and draw conclusions from them consciously (Mercier & Sperber, 2011). Thus, reasoning represents a meta-representational structure on par with verbal and theory of mind representations (models) that allow for intuitive inferences to be made from them. Essentially, the brain has the general ability to perform inferences against meta-representational structures which can provide alternatives to implicitly generated arguments. The production of the arguments create a confirmation bias which reinforces one's own claims based on implicitly generated inferential material.

Haidt (2001) offers four reasons to doubt the causal role of reason in moral judgment. The first includes the rapid automatic evaluation of affective evaluation, relating to the Semantic differential's Evaluation dimension, essentially the implicit gut feeling of good-bad (Haidt 2001). The second involves motivated reason from sources which bias reason, that of social influence from others and protective defenses of one's cultural commitments like beliefs & attitudes (Haidt 2001), which also likely include identities from the CGR evidence (Kahan, 2011). The third exposes moral reasoning to be post-hoc (after the event), which creates causal explanations for behavior out of a "pool of culturally supplied explanations for behavior" (Haidt, 2001). Haidt also mentions Kohlberg's (1982) account of Moral Development serves as rationalized explanations from respondents of implicit

moral judgments, a kind of ethnography of moral communities (cultures). The fourth reason demonstrates that social action covaries with moral emotions. Rather than reasoning driving emotions, action itself stemming from a largely automated source of behavior, drives the production of emotion, agreeing with the PSToE.

This can be seen as an explanation of cultural cognition of risk's ability to seemingly override individual conscious reasoning when cultural-self identity is threatened. Each of Haidt's four reasons provide biases towards the rapid selection of inferential content providing the most safety when under threat. When cultural-identity is at risk, inferences which provide emotional defense against the negation of identity are likely automatically salient. Seeking protection within the group through conformity additionally biases reasoning to select the inference which most closely matches sentiment from valued social influences. Those naturally would provide a better reason for selection than an inference going against sentiment of social influences and provide less moral judgment of self from valued others. This snap reasoning also would align the moral emotions with social actions long engrained by socialization and repetition, thus aligning response to be biased towards cultural cognitive biases. Evidence that people categorize others nearly instantly and the emerging view of social cognition posits that behavior, judgments, attitudes and impressions are made automatically (Haidt, 2001). Thus, the default selection aligns with culturally learned safest "best guesses", which may be further corrected by conscious reflection of previously learned experience.

Affect Control Theory's model of social behavior seems quite applicable towards studying these phenomena since it models the implicit inference processes which comprise a great deal of automated "reasoning." ACT's model could be modified to incorporate the dynamics of autonomic covariation in an effort to expand and more clearly define evaluative and motivational processes and locate autonomic correlates of emotion categories. ACT's clear integration of the dynamics of interpersonal engagement with the semantic meaning of identity, actions, and emotion make it ideal for instructional and potentially perspective enhancing teaching tool towards growing awareness of the implicit social perception which takes place via an automated control system. Gaining conscious awareness of this subconscious system could provide not only a new perspective on one's own and other's behavior, but also possibly provide an important technique for developing new therapies and improving a social relations.

## CHAPTER TWENTY-THREE

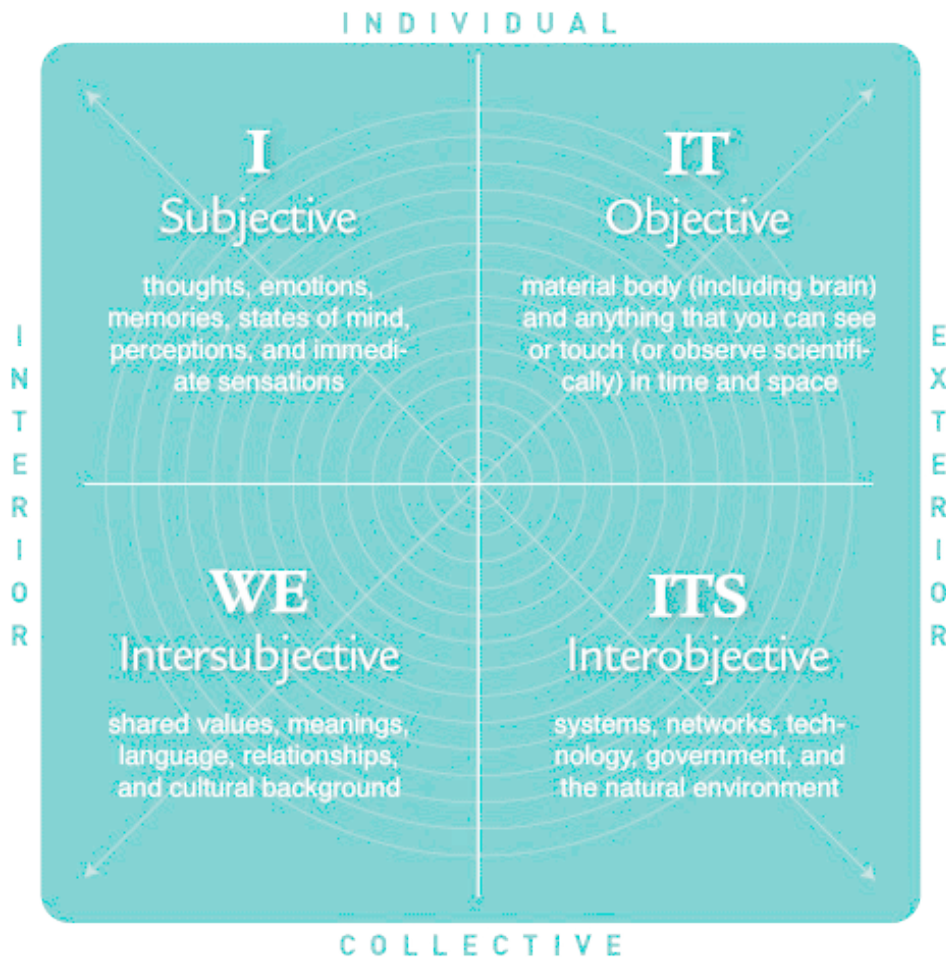
### An Integral Perspective

*“It is a narrow mind which cannot look at a subject from various points of view.”*

*George Eliot, Middlemarch*

This study is named an Integral Theory because in attempts to construct a full, integral picture of the “elephant” by combining knowledge from different epistemological perspectives in hopes of finding some common way of systematically relating those different knowledge perspectives into a new unified model. However, rather than beginning with the Integral framework developed by Ken Wilber (cf 2000a), this study begins with with analytic frameworks of theories from different levels, with the hope of constructing a parsimonious framework combining all levels that could negate the effects that only upward or downward reductions (Wiley, 1995) would introduce.

While Integral Theory offers many theoretical propositions which this study hopes to elucidate, many of its “advanced” features are beyond the scope of this study. The Integral framework takes as its universal perspectives the Internal-External and Individual-Collective dialects, which when set orthogonally, produces a map containing the Internal Subjective perspective of individuals, the External Objective perspective of individuals, the Internal Intersubjective perspective of collectives, and the Interobjective perspective of collectives. In Integral Theory lingo, these four quadrants represent the I, It, We, and Its perspectives.



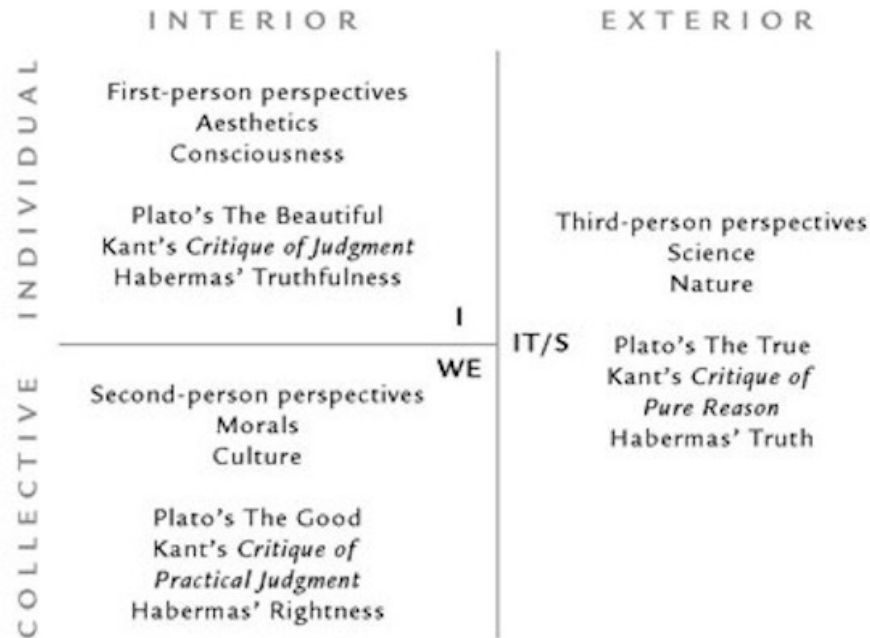
**Fig. 23.1** - Integral Theory Quadrant Map - *Source:* DailyEvolver.com

Furthermore, each of the Integral Quadrants can be methodologically studied from within that perspective (experientially) or from outside of that perspective (observationally), yielding eight methodological or paradigmatic Zones. Integral Methodological Pluralism posits these zones represent fundamental, irreducible knowledge perspectives which can produce truths about reality for which no other perspective (zone) is privy. Very generally, the scientific enterprises focused on the Psychological, Physiological/Behavioral, Cultural and Social levels map to these four quadrants, and the various schools of thought and methodological practices sorting into those levels either involve internal study of that quadrant perspective or a distanced observational study of the perspective.

Thus, the subjective knowledge from thoughts, emotions, or sensations experienced by individuals through diverse domains such as Buddhism, Meditation, or Phenomenology is gained internally from the inside, while Psychology, Psychotherapy, and Structuralism are knowledge pursuits which

examine that Subjective perspective externally, from an observational position. Similarly, the objective external reality of the individual is the domain of the physical sciences including the biological, behavioral, and other empiricist sciences, which glean knowledge from the outside, while its interior is examined by Cognitive science, Autopoiesis Theory (Maturana & Varela, 1987) and Enactivism (Varela, Thompson & Rosch, 1987). The Intersubjective knowledge of collectives include Worldviews, Values, Norms, Language, etc, studied from the inside via Hermeneutics and Exegesis, while from the outside by Anthropology, Intersectionality, and Critical Theory. The Interobjective collective quadrant includes all the systems, technologies, and institutions which emerge from collective behavior constructing the Social System and Environment, studied by domains such as Sociology, Systems Theory, and Environmentalism. The Interobjective studied from the inside is the province of Social Autopoiesis, which elucidates how collective processes, such as the Law, can be conceived as a self-reproducing system of meanings constructed from the system of communications within communities (Teubner, 1989).

Integral Theory's quadrant perspectives have a relation to person perspectives, emanating from the different speaker perspectives (Habermas, 1979), which create realms of knowledge corresponding to a first-person Subjective realm, second-person Intersubjective realm of Normativity, and a third-person Objective realm. Validity claims made from these perspectives differ, in that first-person Subjective claims can only be judged for their Truthfulness, second-person Intersubjective claims for their Rightness, or third-person Objective claims for their Truth (Habermas, 1979).



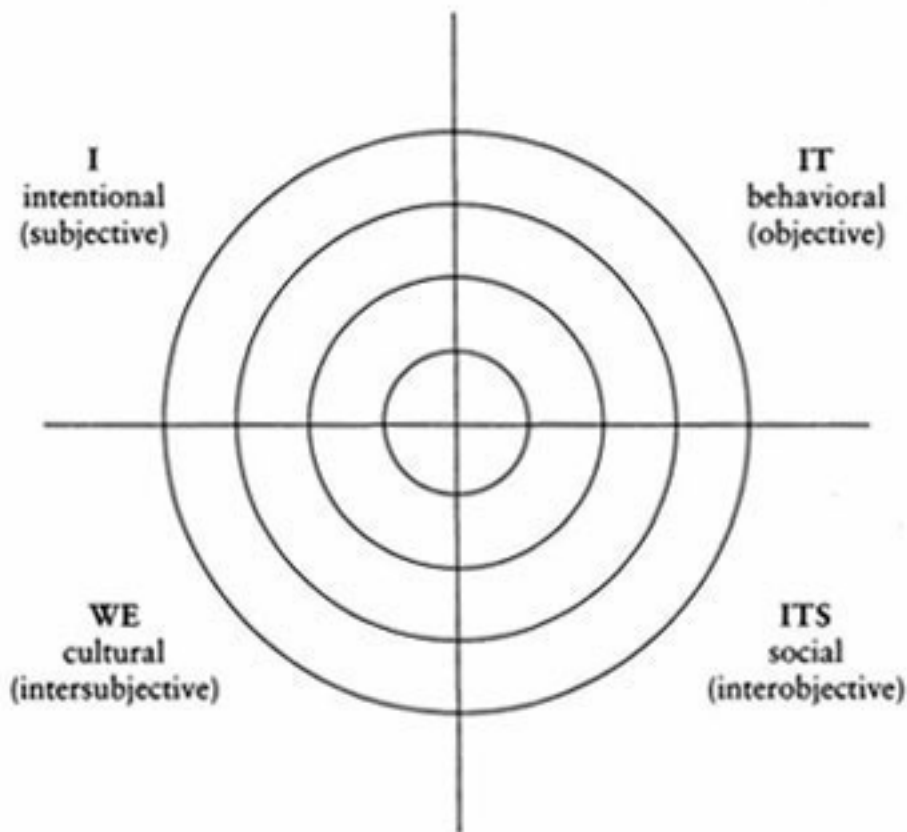
**Fig. 23.2** - Integral Theory Person Perspectives - *Source:* IntegralAcademy.eu

Integral Theory is also an evolutionary theory which introduces the AQAL Map, which is an acronym meaning All Quadrants, All Levels, All Lines. It means that each quadrant contains stages (Levels) of development over which individuals and collectives vary and grow in competencies and complexity of organization (Lines), with each level representing a different logical type. Each quadrant contains different ontological manifestations that grow and evolve, which in IT's Individual Objective quadrant 2 represents the physical structures the biological world is constructed, running from quarks, atoms, molecules, cells, organs, nervous systems, organisms, species, ecosystems, etc. For Quadrant 3, its cultural hierarchies imagined having evolved over earth's history, while in Quadrant 4, its social systems and technological epochs. However, in Quadrant 1 of Individual subjective experience, IT posits a detailed series levels of Consciousness extending into the mystical and non-dual take Integral Theory away from mainstream academics into the meta-physical.

However, Integral Theory's Developmental Levels also have a standard model based upon the stage theories of Piaget (1932) and Kohlberg (1981), among many others (cf Wilber, 2000b), in which individuals develop and grow competency, care and concern over Preconventional, Conventional, and Postconventional stages of development. A standard model of developmental levels that span those stages include a hierarchic set beginning from the impulsive, to egocentric, to group-centric, to universal, to integral. Although not specifically identified as such in Integral Theory, these represent

competencies of Self over the ontological symbolic levels (**Fig. 15.4**) outlined by Wiley (1991) that underlie the universal inner semiotic of thought.

The nomenclature used by Integral Theory to define levels have a few variants, this standard set can be paired with the Ontological levels in **Fig. 15.4**, which although different logical levels, aren't characterized as developmentally different but represent different ways the Self-process comes to know the world from different ontological perspectives. At the Physiological - IT's impulsive first level is defined by perception and action that is ruled by the emotions. At the Psychological - IT's Egocentric second level, behavior is motivated solely by one's desires. At the Interpersonal - IT's Group-centric third level, behavior is defined by the group (roles). At the Social - IT's Institutional fourth level characterized as world-centric, behavior is self-directed in pursuit of achievement and social identity (norms). At the Cultural - IT's Interindividual fifth level characterized as integral, the postconventional is achieved through seeing outside of one's culture to systematic similarities between culture.



**Fig. 23.3** - Integral Theory Quadrant Levels - *Source: IntegralLife.com*

At each of these levels, IT characterizes growth of care as including and extending from self-focused, to group-focused, to society-focused, to world-focused. This may be seen as expanding the boundary around which one's concern is focused as people expand their sense of Self to include collective identities (Wilber, 2000c). Integral Theory also specifies Developmental Lines relating to multiples "intelligences" (Gardner, 1982; 1993) that evolve during maturation and socialization well into adulthood, which too are beyond the scope of the interpersonal focus of the Social Self Model of this study. Finally, there is the theory of Spiral Dynamics (Beck & Cowan, 2006)(Wilber, 2000a), which describes the developmental levels of culture, which will be covered later.

The product of developmental lines Quadrant 2 produce a line of nested holons (Wilber, 2000a), which come from Holonic Theory (Koestler, 1970), which attempts to overcome the problem of defining Parts and Wholes in the Physical sciences, particularly in Biology and Organismic Sociality, and strongly related to Control Theory (Powers, 1973). In relation to biological and social sciences, Holons are self-regulating open systems displaying both autonomy of a whole and dependency as a part. Integral theory uses holonic theory to show the evolution of the physical universe from elementary particles from the sub atomic to the biological, as well in its characterization of growing social holons, which are collectives of individual holons with a group identity or sense of "we"-ness, and systems of holons at different levels of hierarchy are defined as Holarchy.

This study traces through Scientific theories studying perspectives of human language, interaction, thought & emotion to understand from an outside perspective, how knowledge from these ontological levels can be modeled into a coherent structure to find the underlying commonality between the Biological and Social Sciences. It is an effort at Consilience, defined by Whewell as "the 'jumping together' of knowledge by the linking of facts and fact-based theory across disciplines to create a common groundwork of explanation" (E.O.Wilson, 1998: 18). Holonic theory has applicability to this study and to Consilience, as the Parts and Wholes problem has relevance at every level of study covered above.

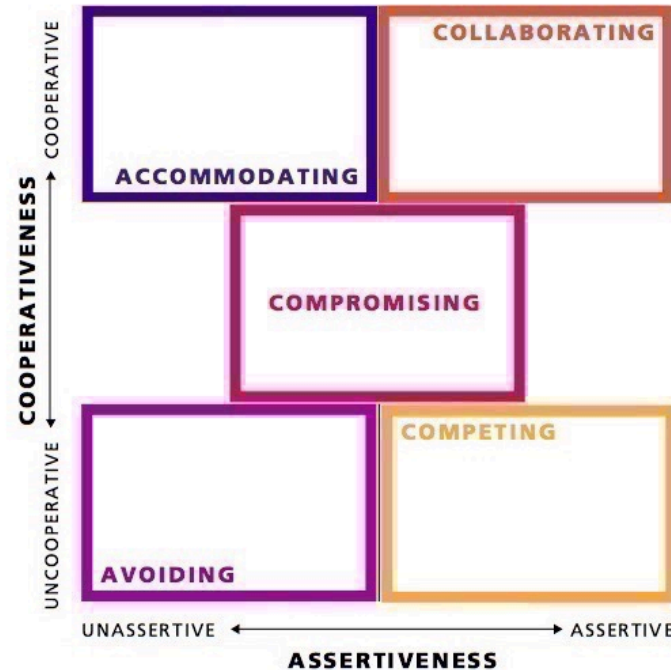
Within each discipline and each theory analytic, the division of autonomy between components at that level of study have dependencies to lower levels of organization that ripple down the holarchy. This is evident in the Social Structure having dependency on mass behavior of organisms, which have dependency on the psychological systems evolved toward adaptive behaviors, which are dependent



upon the neurophysiological systems controlling intero-, extero-, and neuro-ception to modulate the autonomic nervous system, etc and so on down the holarchic chain to the DNA molecules and the proteins they code for. At each level of the holarchy, selection can occur that reorganizes the holons below into a new pattern, which optimizes fitness. This can happen at the level of DNA, as well at higher levels of the holarchy.

The unifying dimensions labeled Group-Grid, Community-Autonomy, Collective-Horizontal, Status-Power, etc., when intersected produce the quadrant pattern typologies of human collectives that differ in their beliefs, behaviors, values, motivations, etc., and importantly how they solve group level problems. However, when problems exist that affect all groups, these problems exist at the intersection of these dimensions (E.O. Wilson, 1998), where parts and wholes ill defined. Problems affecting the holarchy at a level above the individual or group or whatever social holon, require problem solving at a higher ordered level that can integrate best practices across all holons and importantly, get buy-in so that each group is represented in the solution. At a time when problems facing human groups are Global in scope requiring great cooperation, this has never been more important to highlight.

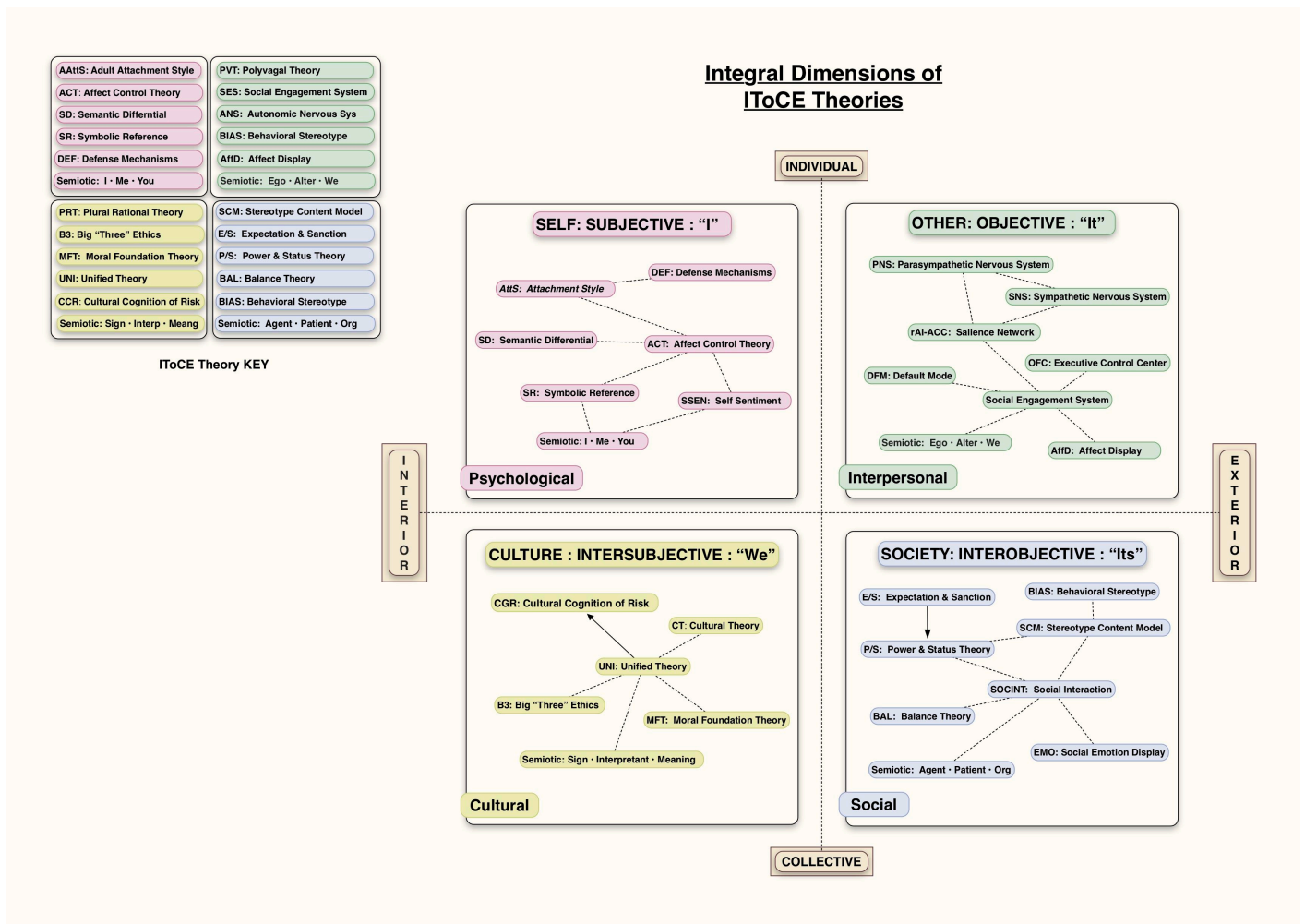
Seen from the lens of Conflict Theory, five different different strategies for resolving conflict negotiate Cooperativeness and Assertiveness (**Fig. 23.4** below), which in the case of globally scoped problems, cannot rely on Avoidance, Competition, Accommodation, or Collaboration alone as resolution strategies, but must include Compromise. While a compromising position is a loaded term oriented towards competition, its location in the center between social holons allows Compromise to integrate the perspectives outside of the center. Solutions to human problems, especially at the group level, require integrative decision making and rationality, both dependent on emotion and both differentially influenced by the Worldviews, Social relational models, social dynamics of Power & Status, and the emotional dynamics of expectations and sanctions. Thus, integral solutions to such problems must take a whole account emotions and of the holonic parts of the whole.



**Fig. 23.4** - The 5 Options of Conflict Resolution (Isomorphism) - *Source: kilmanndiagnostics.com*

The consilience across knowledge disciplines can be seen by taking an Integral perspective of everything presented so far by sorting the theories covered by this study into the quadrants of Integral Theory. The Social Self Model (**Fig. 19.2**) provides a snapshot of our multi perspective dataset. It can be translated to the Integral Theory AQAL model by sorting the various knowledge perspectives into the Integral AQAL framework orientation. Sorted into an AQAL model to examine evidence from Integral theory's perspectives and levels will allow for a systematized global view of the connection between levels and parts and wholes, which will help to validate this theory.

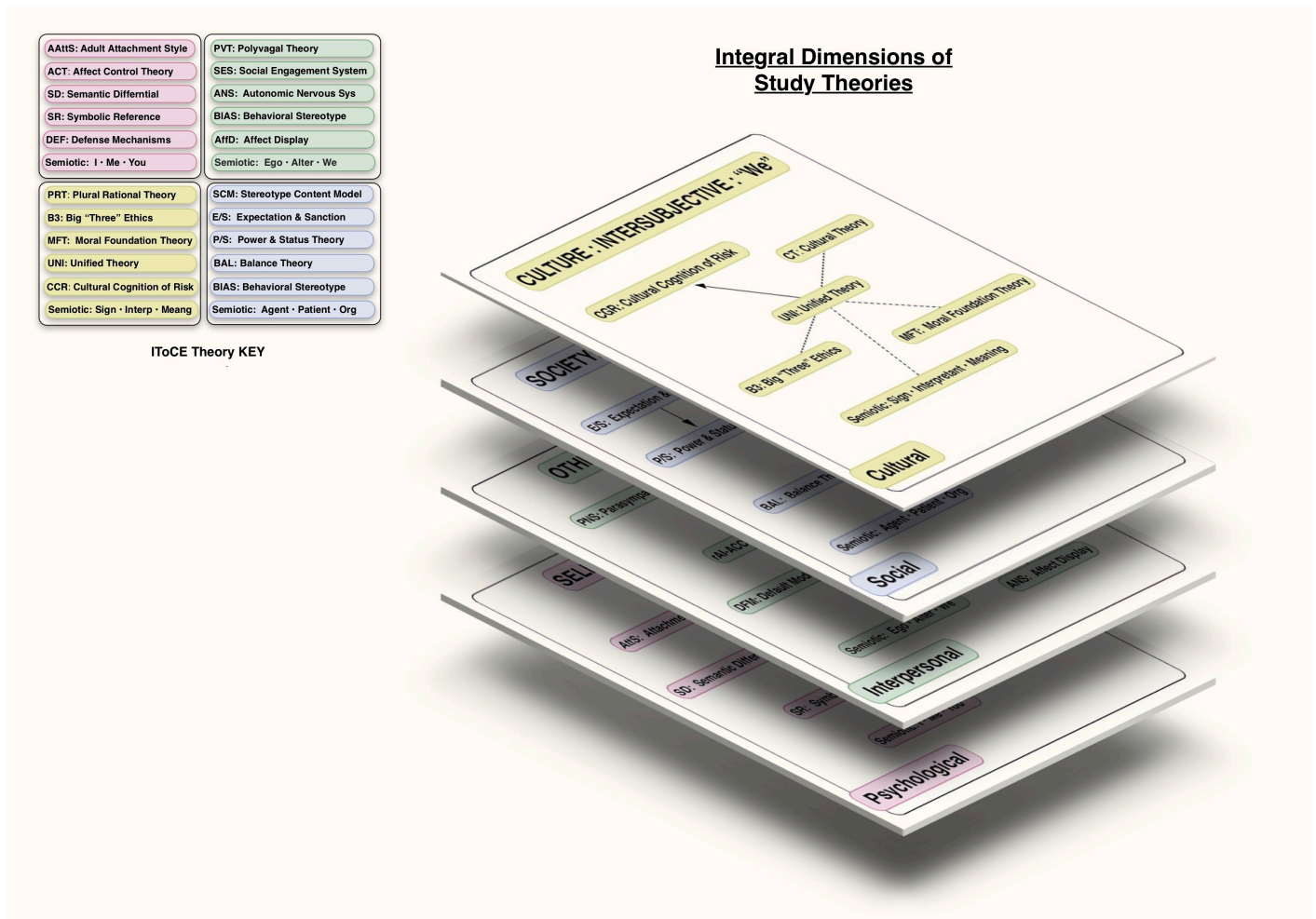
The theories covered by this study, the IToCE, can be roughly sorted into Integral Theory's quadrants, although many of them combine multiple perspectives, as disciplinary boundaries within the sciences are disappearing (E.O. Wilson, 1998). However, the intention of **Fig. 23.5** below is to show that across the interconnected theories at different levels and perspectives, taken as a whole they begin to show a consilience in the similarity in the patterning of their analytics found in the Social Self Model (**Fig. 19.2**), which points to an hidden symmetry underlying their models and underlying these ontological levels.



**Fig. 23.5** - IToCE Theories map

Accompanied by their analytic models, these theories could help to construct an overall analytic which could provide an empirical framework for confirming the validity of Integral Theory itself, who's detractors point to its lack of testability and falsifiability in their dismissal of it in mainstream academics. However, its clear that to "prove" Integral Theory, an integration of interdisciplinary work must occur, and an analytic model is required.

The new model presented by this study (**Fig. 19.2**) can be better comprehended by devolving the Social Self Model into levels. While the ordering and placement of theories and analytics are neither exact nor well measured, they allow a new way of seeing the evidence presented so far, in which the parts can be seen as a new whole.



**Fig. 23.6 - IToCE Social Self Levels Model**

The two dimensions of Power & Status not only define the basic units of microinteraction, but can also be projected upward as common dimensions at higher macro levels of analysis (Kemper & Collins, 1990). Micro-, meso- and macro-level analysis of these two dimensions also apply cross-culturally among whole societies, as well as among subcultures among classes, organizations and professional groups. They're able to link both "upward" macro-levels in society and culture and "downward" physiological and neurophysiological levels. Our social cognition interprets them as Warmth & Competence, Plural Rationality Theory, and Cultural Cognition characterize their cultural level forms as Grid & Group, Morals and Ethics explain their social order forms as Community & Autonomy, while psychology sees them in the form of behavioral orientations towards Agency & Communion.

We can also recognize these dimensions in analysis of behavioral and physiological models: in the generation of second order emotions, the functioning of the ANS, the defense strategies in

attachment styles, BIAS and semantic differential. The basic dimensions of relation of self & other are the essential perspectives of human micro-interactional pattern producing second order patterns at various levels of analysis. While Kemper and Collins, who first compiled these similarities across many fields of study state showing that Power & Status emerged at nearly every level of study of human interaction, they state that the most important route proceeds from the outside in, that the social drives the physiological. However, Porges' polyvagal theory differs from this, claiming that *"the range of social behavior is limited by physiological state"* (Porges, 2001), it starts from the inside and works outward, where exercising the neural regulation via the vagal brake to sooth defensive strategies and reengage the social.

Scheff (1997) proposes a theoretical model of social behavior spanning from micro behavioral interaction to the macro structure of social groups. Scheff begins with the observation that single case and comparative methodologies for studying human behavior, measuring parts and wholes, respectively, require methodological integration. Their institutional separation via the boundaries of Empiricist and Constructionist paradigms, prevents the integration of Biological and Social Science disciplines. This separation between top down and bottom up reductions results in a dichotomy of theories which often produce diametrically opposed theoretical models for particular phenomena of study. Verweij's (2007) theory of Constrained Relativism provides a pragmatic example of a theoretical bridge between such a gulf by imposing as boundaries neurophysiological restraints on theory construction, which leads to a middle ground between competing schools of thought spanning the Materialism - Idealism divide (e.g., Rational Choice Theory vs. Social-Constructionism). However, Scheff's effort represents a broader, more generalized paradigm with specific focus on social integration anchored by emotion and the social bond.

Scheff's specific theory posits the social bond as the optimal level at which Social Integration operates, centering study at the level of social interaction between a dyad with a special focus on the language as indicator of the state of the bond. Scheff's analysis begins with the detailed study of a verbatim segment of interaction over some set of time, an interaction event composed of a series of social actions, which provides a dataset of a particular exchange of social actions between two actors "instantiating" a relationship. The analysis combines linguistic analysis (semantic) with ethnographic coding of affect (tone, gesture, communicative pattern). Relationship dynamics are fleshed out through the microanalysis of interaction to reveal the health of the relationship from the

actual words and non-verbal affective cues inherent in each actors' actions. Inferences can then be made to reveal the both the relational meaning and social structural elements which influence the relationship, ie, emotion cues indicating embarrassment put dialogue into context revealing a patient-therapist hierarchy and a dysfunction of engulfment (Scheff, 1997). The micro-macro combined analysis yields the strength of the social bond, a measure of social integration between the two running from social solidarity to alienation.

Scheff's methodology produces a theoretic tripartite model of Social Integration (**Fig. 23.7** below), which posits social integration as being too little, too much, or balanced between the micro and macro. Scheff finds a similar pattern across the spectrum of Social Science theoretic and empirical models. Optimal health of Social Integration results in what social theorists have conceptualized as interdependence (Elias), solidarity (Durkheim), secure-bond (Bowen), I-thou (Buber), while empirical indicators provide data points such a emotions : Pride (Scheff & Retzinger, 1991), Secure attachment (Ainsworth & Bowlby), I-WE relationship(Elias). Too little integration leads to conceptualizations such as Independence (Elias), anomie (Durkheim), isolation (Bowen), I-it (Buber), with empirical indicators such as Bypassed Shame, Avoidant Attachment, I-we. Too much integration leads to conceptualizations such as Dependence (Elias), engulfment (Bowen), it-thou (Buber), accompanied by empirical indicators like Overt Shame, Anxious-ambivalent attachment, i-WE (Elias).

### Social Integration

Too Little		Too Much	
Anomie	solidarity	Altruistic	E. Durkheim
Alienation	communism	?	K. Marx
Stigmatization	Reintegration Shaming	?	Braithwaite
Independence	Interdependence	Dependence	N. Elias
United States	?	Japan	T. Doi
Isolation	Secure bond	Engulfment – confusion	M. Bowen
blame – compute	Leveling	placate - distract	V. Satir
I – it	I – Thou	It – thou ?	M. Buber
Alienation	?	Self-estranged	M. Seeman
I – we	I – WE	i – WE	N. Elias
Bypassed Shame	Pride	Overt Shame	Scheff-Ratzinger
Avoidant	Secure	Anxious-Ambivalent	M. Ainsworth

**Fig. 23.7** - Social Integration - *Source: Scheff (1997: 100, Fig. 4)*

Scheff's Social Integration theory provides several relevant features which this study can set as a general template for further analysis of the MMM & MFT model. It includes a part/whole analysis using the combined methodology of top down and bottom up analysis, using both empiricist and constructionist frameworks, from a verbatim sample of social interaction *in situ* capturing multiple modalities beyond simply the semantic. That includes the detailed textual analysis of the meaning of the text semantically, as well as the meaning of affective non-verbal communication exchanged in its microanalysis. This provides a temporal linkage between simply textual analysis and affective social signals which put the text into context, combining both the digital and analogue components of social communication together (Watzlawick et al., 2011). The empirical data generated may be then analyzed according to social theories of Social Integration across different Levels, in hopes of confirming agreement across the micro and macro.

Scheff's theory places the interpersonal as the optimal perspective from which humans reach social integration via the social bond. A secure bond is one in which both of a dyad experience a balance between their own self and the shared intersubjective self. A focus predominantly upon self leads to social action which isolates an individual from the experiential exchange of social affect and shared identity of a group. A focus predominantly upon the group leads to an estrangement and distraction from one's self, risking engulfment in the group identity.

For the purposes of this study, the actual empirical paradigm of Scheff's study is less important than his overall argument for structuring methodology to incorporate both Empiricist and Constructionist methodologies. An analysis incorporating methodologies from both a top down and bottom up approach, as well as linking empirical data temporally, reveals levels of agreement for both upward and downward reductions. Analysis can oscillate across both to produce a fuller confirmation of a theoretical social model.

Scheff's analysis combines both qualitative narrative analysis to establish temporality and context combined with quantitative analysis. However, they are done from an observational perspective, one of detached observer, as is the data analyzed via transcript and video, which leaves out the engaged intersubjective involvement in the interaction. A pragmatic approach going up and down levels of analysis using induction and deduction would approximate Peirce's adductive process.



**A Pragmatic Alternative to the Key Issues in  
Social Science Research Methodology**

	Qualitative Approach	Quantitative Approach	Pragmatic Approach
Connection of theory and data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Intersubjectivity
Inference from data	Context	Generality	Transferability

**Fig. 23.8** - Pragmatic Paradigm in SSR Methodology - *Source: Morgan (2007: 71, Table 1)*

Thus, an integral framework for analyzing social behavior and the evolution of culture must incorporate the essential perspectives of Subjectivity, Objectivity and Intersubjectivity. Inductive approaches must be balanced with Deductive approaches, in a cycle of hypothesis setting and revising to hone in on the patterns that connect up and down every ontological level and across the differences created by covariance across two universal dimensions. An Integral Theory of Cultural Evolution requires a full accounting from every perspective of the phenomena that connects up and down and across all quadrants. It requires an integral theory of Emotion.



## CHAPTER TWENTY-FOUR

### A Color Theory of Emotion

*“A complete account of emotion, however, should make reference to all levels of analysis, ranging from the feelings and behaviors associated with emotion to how they are computed at the neural level of brain structures and systems.” Ochsner & Barrett (2001: 2)*

An Integral view of emotion theories yields a middle path reconciling both objectivist and constructionist positions (Plutchik, 2001), a new way of conceptualizing the problem. The emotion theories of Plutchik, Ekman, Kemper, Thamm, Porges, and Barrett can be integrated into a single theory where psychological, neurophysiological, social, and cultural perspectives coincide and evidence reconciled. This study offers that an integral understanding of emotion can be envisioned by constructing a theory of emotion analogous to the theory of color vision. While emotions have long been compared to color in their resemblance to primary colors that can be blended, no such group of primary emotions can be agreed upon, nor can their neural correlates be found (Barrett, 2006). However, the now well understood neurophysiology and psychology of color explained by an opponent color theory model (Kay & McDaniel, 1978), deeply informed by a basic-level categories and prototype theory (Rosch, 1978), serves as an appropriate analogue for establishing a unified theory of emotion.

Lakoff (1987) explains how the discovery of categorization of color perception provides a deep insight into the workings of cognition and affect, via his cognitive linguistic theory, which posits that language functions through categorization and that metaphor of embodied action underlies our semantic explanation of feelings (Lakoff, 1987). This is especially true of emotions, which can be described by metaphoric language tying certain emotions to experiences typifying their expression, e.g. pressure, heat and explosiveness for Anger (Lakoff, 1987). Lakoff's theory arises out of the application of Rosch's (1978) reformulation of categorization systems and prototype theory to language and semantic meaning. Overturning the long held view that all category members must share a common attribute, Rosch found that vision perception and the naming of color categories

shared both universal and distinctly cultural aspects, which helped to reformulate the Berlin-Kay (1969) theory of color vision mentioned earlier.

Categorization systems have been found to have two principles: one in that they represent “maximum information with the least cognitive effort” and two, that they “map the perceived world structure as closely as possible,” providing the advantage of “reduc(ing) the infinite differences among stimuli to behaviorally and cognitively usable proportions” (Rosch, 1978: 3). Moreover, categories have separate “vertical” and “horizontal” components. The vertical component refers to basic level categories being situated between superordinate “above” or subordinate “below” categories, a level at which in the case of real world objects, share the most in common with respect to sensory-motor interaction with the world having common motor sequences (Rosch, 1978: 8). The horizontal component of categorization are prototypes, which rather than exemplars having some central trait for which all members of the category share, instead are perceived in their degree of prototypically, which Rosch ties to the principles of “maximization of cue validity” and “maximization of category resemblance” (1978, 12).

*“Cue validity is a probabilistic concept; the validity of a given cue  $x$  as a predictor of a given category  $y$  (the conditional probability of  $y/x$ ) increases as the frequency with which cue  $x$  is associated with category  $y$  increases and decreases as the frequency with which cue  $x$  is associated with categories other than  $y$  increases.” Rosch (1978: 5)*

Interestingly, focal colors serving as ideal instances of these shades are consistently selected as the best example of each color across all cultures, whether they explicitly recognize the shade with a label or not (Lakoff, 1987). Thus, when asked to choose the best example of red from a choice of chips in several shades of a red, focal red is chosen as exemplar no matter what culture they're from, while similarly, the same holds true for hues of blue, yellow and green; focal colors are chosen as the most representative of those colors (Lakoff, 1987). This surprising result indicates a neurophysiological commonality underlying vision perception, despite a distinctly cultural aspect to color (Lakoff, 1987).

The universals of color vision emerge from the neurophysiological processing of color by ganglion cells connected to the rods and cones of the retina. A set of six distinct cells served to break up the visual input into three sets of color opponent pairs which distinguish Blue-Yellow, Red-Green and

Light-Dark. Four types of cells (+B-Y, -B+Y, +R-G, -R+G) fire at a base rate with no stimulus, but at different rates when encountering wavelength signals. These different rates indicate varying amounts of blue, yellow, red and green. The other two cell types measure lightness and darkness (+L-D, -L+D).

Blue-Yellow cells (+B-Y, -B+Y) together determine the response to blue or yellow stimuli via the union of their cell firing rates. The +B-Y cell fires at a high rate when encountering Blue, while the -B+Y fires at below rate. The situation is reversed when encountering Yellow. For red or green stimuli, the union of Red-Green cell (+R-G, -R+G) signals result in the +R-G firing high when encountering Red, while the -R+G fires low, and vice versa when encountering Green.

Kay & McDaniel (1978) helped to integrate the purely neurophysiological with psychological by showing that fuzzy sets of primary colors could be combined to produce the additional primary color categories of brown, pink, orange, turquoise and grey. Blended primary colors are experienced from different firing rates of these four types of color processing cells in combination with two processing Light and Dark. For example Pink occurs through the combination of +R-G firing high and -R+G firing low (Red), the blue-yellow cells firing at a neutral base-rate, while the lightness cell (+L-D) firing high while the darkness cell (-L+D) firing low. Similarly, Brown is constructed from Yellow and Darkness, Orange from Red and Yellow, Purple from Blue and Red, Turquoise from Blue and Green, and Grey from Light and Dark. This set of cells firing in different categorical modes produces experience of and limits of the categorical basic colors, although they allow for all the gradations of non-primary colors produced across the visual cellular functional plane. Cultural language delineates, names, and shapes the categorical modes influenced by their environment, although neurophysiologically constrained. Thus, the neurophysiological explanation unites the pancultural aspect of human color perception, explaining the perception of the basic colors directly relatable to the structural/functional architecture of the six types of color cells. The psychological component reflects cultural variance which may place non-primary colors in a small n-tuple set of primary color categories.

Visual information represents one modality coming in from a specialized system for translating light into internal signals that are then routed and rerouted internally through dedicated neural regions to compute spatial, spectral, and depth visual information, pattern matched with information held in

associative memory, and eventually perceived internally in the everyday images seen through the eyes. Only these visual images are re-presentations of representations that exist internally. They eyes aren't seeing, the brain is.

A similar neurological dynamic must exist for emotions, which are simply another type of perception to the brain. Likewise, affective information representing information about others and about social concepts, including one's self-concept or that of the relationship, is streaming in through multiple modalities, including vision, and affective social cues are translated into internal signals which are also routed and rerouted internally through dedicated neural regions to compute various aspects of non-verbal communication and eventually perceived internally in the everyday emotions felt through the body. Only these emotional images are re-presentations of representations that exist internally.

Opponent-color theory and fuzzy categorization provides not simply an analogy but the outline of a universal theory of emotion which can serve to unite theories from across academic disciplines. Emotion, too, must have both neurophysiological constraints, as well as psychological components reflecting cultural variance, which may be demonstrated by a system similar to the opponent-color theory's combining of neurophysiological evidence with psychological categorization.

Yet, the search for emotion "cells" or neurological circuits for each primary emotion has yielded little evidence, as the neural components of primary "colors" of emotion are not found in particular locations of the brain (Barrett, 2006a: Table 1). Similar to Lakoff's cognitive linguistic theory of semantic meaning resulting from embodied action, Barrett's conception of the integration of sensory, motor and semantic meaning into the categorization of emotion comes close to explaining emotion as constructed without a "neural fingerprint." Barrett's (2006b, 2017) CAM and CTE combine categorization theories with emotion construction, but from a hard constructionist position, denying a neurological analogue to emotion generation. However, the "fingerprints" neuro-imagists are searching for and not finding, cannot be found in snapshots of brain activity. And brain states cannot be the source of psychological categorization, since their functioning occurs subconsciously, invisible to people's naive realist observations.

However, like the color visual system, the Autonomic Nervous System (ANS) also functions as an opponent control system (Craig, 2015)(Schore, 1998) in a complex heterogenous fashion producing

many discreet states (Berntson, Cacioppo, & Quigley, 1991) from the functioning of hierarchically organized separate subsystems (Porges, 2001), while also producing psychologically categorizable signatures (Kemper, 1987)(Porges, 2001).

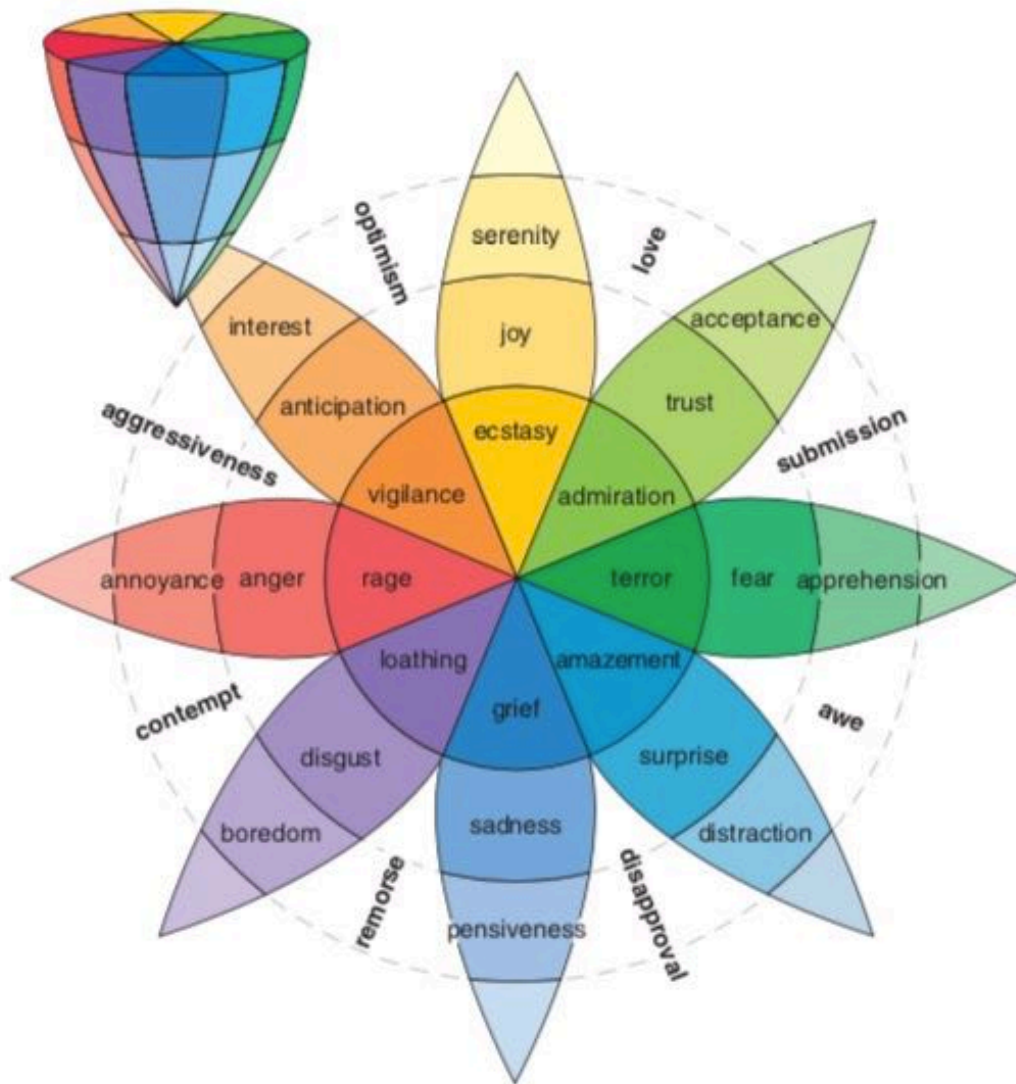
Polyvagal Theory's three emotion subsystems produce a psychologically recognizable set of behavioral responses at a universally basic level, producing four modes visualized in **Fig. 9.9**, the Emotion Motivation Theories Response Matrix, which shows the DVC, VVC and SNS fight or flight modes patterning over the two universal dimensions of the Social Self Model. Each of the four quadrants represent a stereotypical response of the ANS with motor behavior, with other theory typologies similarly oriented showing the similarity with neurochemical signature, psychological motivation, evolutionary defense strategy and prototypical emotion category.

Simplified models of ANS functioning, like the color cells of the visual cortex, can be divided into paired Blue-Yellow (Parasympathetic) and Red-Green (Sympathetic) "cells" which are able to co-activate to produce an infinite variety of states (Berntson, Cacioppo, & Quigley, 1991). These autonomic "cells" represent prototypical autonomic response patterns in different modes of operation: Depression (DVC activated, parasympathetic withdrawal, neutral sympathetic), Satisfaction (VVC / parasympathetic activation, neutral sympathetic), Fear (neutral parasympathetic, sympathetic withdrawal), Anger (neutral parasympathetic, sympathetic activation). The co-active functioning of the three emotion subsystems described by Polyvagal Theory (Porges, 2011) produce recognizable physiological patterns for particular situations as a result of social behavioral substructures that Kemper (1978, 1987) asserts emerge as universal dimensions of social interaction, namely Power and Status.

Using Kemper's (1987) terms, these four autonomic emotion categories are recognizable as Satisfaction, Depression, Fear, and Anger. They are included in the vast majority of theories of primary emotion (Ortony & Turner, 1990). While a wide range of affective sensory cues accompany instances of these emotion categories, prototypical cues for each category are universally recognized and identify stereotypical instances (Ekman, 2003; Barrett, 2007). Each are prototypes with stereotypical facial, intonation, autonomic, and other sensory cues, originating from the symbolic functioning of the Autonomic Nervous System and associated with a wide variety of situations and behaviors. Satisfaction, Depression, Fear, and Anger can be categorized into four fuzzy sets,

functioning in emotion “perception” analogous to Yellow, Blue, Green and Red color cells.

Thamm’s extension of the Power & Status Theory of Emotion crucially adds Expectations and Sanctions as the primary social-structural universal dimensions which generate emotions (Thamm, 2004). While not emotions themselves, they are rather “two critical dimensions of any interaction that constrain and circumscribe the valence and amplitude of emotions” (Thamm, 2004: 192), with valence and activation the basic dimensions of what Barrett (2012) refers to as Core affect (Russell, 1980). Expectations and Sanctions are social relational dimensions that must be incorporated into any emotion theory, representing a key to uniting Social and Psychological models of emotion. They represent two additional dimensions of emotion experience, each analogous to color vision’s Light-Dark brightness dimension, which somehow combine with the “firing” of primary “emotion cells” to create blended emotion categories.



**Fig. 6.3** - Primary & Blended Psychological Emotions - *Source: Plutchik (2001: 349, Fig. 6)*

Plutchik's circumplex model, **Fig. 6.3** shown again above, contains four primary emotions matching Kemper's (1978) autonomic modes (which were termed Joy, Sadness, Fear, Anger) and Panksepp's (1998) four basic affects. In addition, Surprise and Anticipation primaries represent nodes on either end of a prediction continuum essential in emotion appraisal (Lazarus, 1992). Disgust and Trust represent nodes on either end of the status of the social bond (Scheff, 1997), which can be seen as dimensions corresponding to the motivational dimension guiding social prescriptive sanctioning of punishments and rewards. Conveniently, we can use the paired emotions on opposite ends of the Emotion Circumplex to produce a hypothetical model of Color Cells of Emotion: Depression-Satisfaction, Fear-Anger, Surprise-Anticipation, and Disgust-Trust. Similar to the opponent-control theory of color, an opponent control theory of emotion would produce the copious diversity of

emotion gradation through varied settings of these four “color cells” of emotion.

Berntson *et al.* (1991) propose a Model of Autonomic Control in which the Sympathetic and Parasympathetic function in tandem rather than being opposite ends of a single spectrum, and can each vary in their response separably, as generally increasing, decreasing, or steadily unchanged. Further confirmation mapping Plutchik’s emotion “primaries” to these modal autonomic correlates comes from Cacioppo & Berntson’s (1994) study of attitudes offering a similar bivariate Evaluative Space Model (ESM) where Positive and Negative evaluations may co-vary, producing a 2-D bivariate plane identical. While originally considered diametrically opposing systems along one continuum, the sympathetic and parasympathetic (vagal) dichotomous halves of the ANS have been found to operate separably through advances in measurement of the ANS, which have “outpaced conceptual theory of ANS functionality” (Berntson, Cacioppo, & Quigley, 1991). The SNS and PNS may operate in a variety of distinct modes which can be mapped to a 2-dimensional functional surface (Berntson, Cacioppo, & Quigley, 1991).

This study posits this generalized model of autonomic control in which a set of distinct patterns of sympathetic and parasympathetic modulation could serve as the model of affective prototype categories associated with broad classes of situated conceptualizations (Barrett, 2017). Instead of traditional emotion research investigating purely neurological “circuits” as the source of primary emotions, these hypothetical emotion cells can be found in the fuzzy sets representing different modes of autonomic nervous system functioning.

*Modes of Autonomic Control*

Sympathetic response	Parasympathetic response		
	Increase	No change	Decrease
Increase	Coactivation	Uncoupled sympathetic activation	Reciprocal sympathetic activation
No change	Uncoupled parasympathetic activation	Baseline	Uncoupled parasympathetic withdrawal
Decrease	Reciprocal parasympathetic activation	Uncoupled sympathetic withdrawal	Coinhibition

**Fig. 24.1** - Modes of Autonomic Control - *Source:* Berntson, Cacioppo, & Quigley (1991: 463, Table



1)

Three generalized states (increasing, decreasing, unchanged) of both Sympathetic and Parasympathetic response, when intersected, produce a pattern of nine general modes of autonomic functioning, as in **Fig 24.1**. When both the SNS and PNS are increasing in activation, the ANS is said to be in a Coactivation mode. Oppositely, when both are decreasing, they're said to be Co-inhibiting. Reciprocal modes are those in which the SNS is increasing while the PNS decreasing, or vice versa, while the uncoupled modes are those in which either the SNS or PNS is held to no change while the other is either increasing or decreasing in activation, producing a pair of uncoupled modes for each of the SNS and PNS. Baseline represents the ninth mode in which the SNS and PNS are balanced, although this is an idealized mode since allostatic control processes represent constant predictive regulation (Sterling, 2012), not a return to homeostatic zero but rather in constant allostatic adjustment to provide stability and responsiveness.

These modes of autonomic control provide a model of emotion "cells" for categorical prototype functional states corresponding to Plutchik's primary emotion pairs involved in the social regulation processes (Plutchik, 2001). Such a schema could locate the four primary emotion categories arising from threat events (Anger, Fear) and loss/gain (Depression, Satisfaction) (Plutchik, 2001) as the uncoupled autonomic modes, which Polyvagal theory (Porges, 2001; 2007) explains in the coordination and inhibition of autonomic functioning by the three emotion subsystems.

The Sympathetic nervous system is typified as the mobilization system by Polyvagal Theory, fueled by the adrenal system producing fight or flight responses in a spectrum across this response range. Sympathetic modulation of Epinephrine (E) "adrenaline" produces an avoidance (flight) response to avoid threat and escape to safety (Plutchik, 2001), typified by the recognizable state of Fear. The modulation of Norepinephrine (NE) "noradrenaline" produces an approach (fight) response to overcome an obstacle (Plutchik, 2001), typified by the prototypical state of Anger. Fear and Anger emotion categories fit those situations in which the parasympathetic response remains neutral (No Change), where uncoupled autonomic arousal arises from purely SNS withdrawal or activation.

The activation of the Ventral Vagal Complex equalling uncoupled Parasympathetic activation produces a recognizable state of Satisfaction independent of SNS activation. The activation of the

Dorsal Vagal Complex (DVC) is analogous to the withdrawal or decrease in activation of the Parasympathetic, triggered in the case of unmitigated threats in which an SNS response is overridden (Porges, 2003) producing immobilization and a recognizable state of Depression. Both of these Parasympathetic modes, Satisfaction and Depression, are found to remain unaffected by arousal changes (Laird, 2012: 89), further strengthening the match to uncoupled Parasympathetic activation and withdrawal, respectively, independent of Sympathetic activation. Similarly, Anger and Fear provide a match to uncoupled Sympathetic activation and withdrawal, respectively. These “primary” emotion pairs are like the Red-Green and Blue-Yellow set of color vision cells.

### **Modes of Autonomic Control**

		SYMPATHETIC RESPONSE		
		Decrease	No Change	Increase
P A R A S Y M P A T H E T I C  R E S P O N S E	Decrease	DVC Activation – SNS Withdrawal <b>SURPRISE</b> Parasympathetic & Sympathetic CoInhibition	DVC Activation <b>DEPRESSION</b> Uncoupled Parasympathetic Withdrawal	DVC Activation – SNS Activation <b>DISGUST</b> Reciprocal Sympathetic Activation
	No Change	SNS Withdrawal <b>FEAR</b> Uncoupled Sympathetic Withdrawal	<b>BASELINE</b>	SNS Activation <b>ANGER</b> Uncoupled Sympathetic Activation
	Increase	VVC Activation – SNS Withdrawal <b>TRUST</b> Reciprocal Parasympathetic Activation	VVC Activation <b>SATISFACTION</b> Uncoupled Parasympathetic Activation	VVC & SNS Activation <b>ANTICIPATION</b> Sympathetic & Parasympathetic CoActivation

**Fig. 24.2** - Modes of Autonomic Control - *Sources:*

Berntson, Cacioppo, & Quigley (1991: 461-462), Plutchik (2001), Porges (2001, 2007)

The other two pairs of Plutchik’s primaries map to the reciprocal modes and coupled nonreciprocal modes (corner cells), as seen in **Fig. 24.2**. Consider first the identification of reciprocal modes as those which manifest in behavioral contexts (Berntson *et al.*, 1991: p. 454). These describe opposition between the parasympathetic and sympathetic, such as when the vagal brake is applied

(PNS activation) while the SNS withdraws, which Polyvagal theory describes as producing a state which allows for the activation of the Social engagement system and secure attachment (Porges, 2003), providing mutual support and acceptance (Plutchik, 2001), thus feelings of Trust. Conversely, the sudden decrease of vagal activity typified by the engagement of the DVC with simultaneous SNS activation produces an aversive motivation of avoidance, often with repercussions of the digestive system controlled by DVC withdrawal (Porges, 2003), ejecting the unpalatable (Plutchik, 2001), producing a physiological state similar to Disgust.

Coupled nonreciprocal modes occur when the PNS and SNS either CoActivate or CoInhibit, e.g. are both activated or both in withdrawal, which manifest in behavioral contexts (Berntson, Cacioppo, & Quigley, 1991: 454). CoActivation of both the Vagal and SNS has been shown in the presence of aversive conditioned stimuli, as well as attentional stimuli (Berntson, Cacioppo, & Quigley, 1991), representing examination of the environment and extracting knowledge (Plutchick, 2001), aligning in the context of Anticipation. CoInhibition, where both the PNS and SNS are in withdrawal, arises from central reflex mechanisms, which represent automatic non-volitional behavior produced by unexpected events (Berntson, Cacioppo, & Quigley, 1991), as in cases of Surprise, requiring a freezing of the action for time to stop and orient attentional/energy resources (Plutchick, 2001).

These “primary” emotion pairs are like the Light-Dark color vision cells. The reciprocal modes provide fits for Trust and Disgust primary categories having vastly different behavior contexts (outcomes), providing a continua for Sanctions. The coupled nonreciprocal modes provide fits for Anticipation and Surprise primary categories along a continua for Expectations, the two dimensions aligning with Thamm’s (2004) E-S paradigm.

Here evaluations may diverge from purely reciprocal modes of either positive or negative, instead having separable Positivity and Negativity dimensions, resulting in Attitudes produced by the “net difference between positive and negative valent processes aroused by a stimuli” (Cacioppo & Berntson, 1994: 401). While traditional attitude research has been restricted to purely bipolar notions of attitude variation by methodologies and measures sensitive only to reciprocal notions of evaluation (Cacioppo & Berntson, 1994: 405), other research focusing on nonreciprocal modes of evaluative activation have demonstrated that reciprocal modes alone “may not be sufficient to simply and comprehensively capture the patterns of evaluative activation underlying attitudes” (Edwards &

Ostrom, 1971 cited by Cacioppo & Berntson, 1994: 405). Miller's (1959) theory of conflict offers additional support in which positive and negative substrates underlying behavior can be non-reciprocally activated and separable (Cacioppo & Berntson, 1994: 407-411).

The resulting schema of a bivariate Evaluative Space Model (ESM) contains a similar set of modes, where Negative and Positive evaluations may co-vary, producing similar reciprocal, nonreciprocal, and uncoupled modes (Cacioppo & Berntson, 1994: Table 1, 415). While not specifically identifying the autonomic space described in Berntson, Cacioppo, & Quigley (1991), clearly the modes of autonomic activation underlies the Evaluative Space Model as well, with processes of evaluation sharing the same co-variational dynamics and schema structure. Moreover, the ESM contends that as higher order neurodevelopment continues into adulthood, including structures involved in emotion appraisal, the separability between Positivity and Negativity increases, allowing adults to simultaneously experience Happiness and Sadness, for example, while in children this ambivalent affect is limited (Larsen, Ito & Fireman, 2007). This agrees with development of executive controls and greater granularity of autonomic control (emotion regulation) dependent on maturation (Schoore, 2006b).

Similar to **Fig. 24.2**, the combined models including the ESM with colors of emotion are shown in **Fig. 24.3** below.

### **Modes of Evaluative Activation & Attitudinal Props**

		SYMPATHETIC RESPONSE		
		NEGATIVITY		
		low ←		→ high
PARASYMPATHETIC RESPONSE	low	Decrease	No Change	Increase
	↑	DVC Activation – SNS Withdrawal <b>SURPRISE</b> Co-Inhibition Low Dynamic Range Low Reactive Liability Low Directional Stability	DVC Activation <b>DEPRESSION</b> Uncoupled Positive Reduction Intermediate Dynamic Range Intermediate Reactive Liability High Directional Stability	DVC Activation – SNS Activation <b>DISGUST</b> Reciprocal Negative Activation High Dynamic Range High Reactive Liability High Directional Stability
	POSITIVITY	SNS Withdrawal <b>FEAR</b> Uncoupled Negative Reduction Intermediate Dynamic Range Intermediate Reactive Liability High Directional Stability	<b>BASELINE</b>	SNS Activation <b>ANGER</b> Uncoupled Negative Activation Intermediate Dynamic Range Intermediate Reactive Liability High Directional Stability
↓	high	VVC Activation – SNS Withdrawal <b>TRUST</b> Reciprocal Positive Activation High Dynamic Range High Reactive Liability High Directional Stability	VVC Activation <b>SATISFACTION</b> Uncoupled Positive Activation Intermediate Dynamic Range Intermediate Reactive Liability High Directional Stability	VVC & SNS Activation <b>ANTICIPATION</b> Co-Activation Low Dynamic Range Low Reactive Liability Low Directional Stability
	RESPONSE			

**Fig. 24.3** - Modes of Evaluative Activation & Attitudinal Properties -

*Source: Cacioppo & Berntson (1994: 417)*

The dynamics of the diagonal cells are particularly useful. The upper left cell (Surprise) of **Fig. 24.3** with respect to evaluation reflects the activation of low Positivity and low Negativity by a stimulus, a neutral evaluation. Although neutral, however, the diagonal midpoint in attitude formation reflects maximal conflict between evaluative processes, as the stimulus evokes neither positive nor negative affects, creating ambiguity in an evaluation which may oscillate between positivity and negativity (Cacioppo & Berntson, 1994). Its opposite cell, in the bottom right (Anticipation), represents high activation of both Positivity and Negativity from a particularly salient stimulus, for which attention will be directed and whose outcome is anticipated in a ready mode where both the SNS and PNS are allostatically activated and ready to swing in either direction.

Modes also have properties which explain the dynamic of attitude change given the evaluative dimension that is either increasing or decreasing. Directional stability measures the likelihood of the

overall valence continuing in that evaluative direction (Cacioppo & Berntson, 1994). Dynamic Range and Reactive Lability measure the constraint on attitude change, which are maximum under Reciprocal modes (Cacioppo & Berntson, 1994), meaning that high positivity and low negativity, such as the Trust mode, presents the widest range for attitude change as there is greatest difference between positivity and negativity, which is negatively true for the Disgust mode. Attitudes are more able to be affected by negativity or positivity changes in neutral or ambivalent cases (Co-activation modes), while Uncoupled modes are intermediated (Cacioppo & Berntson, 1994).

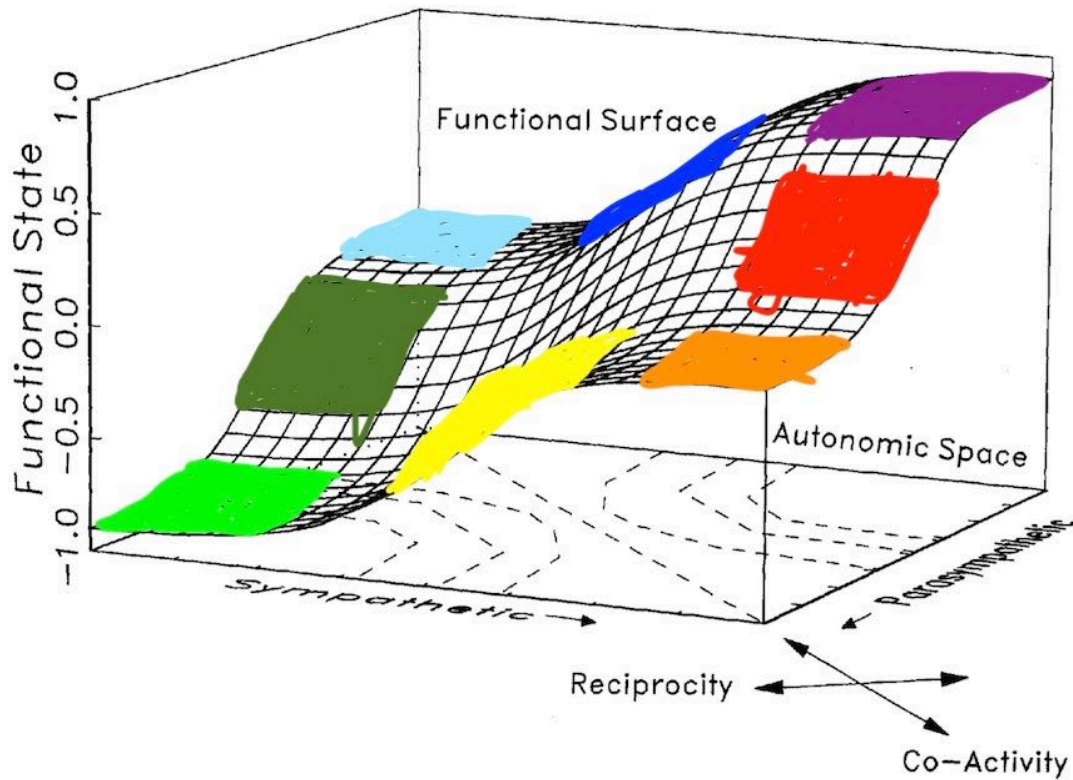
However, the mapping of primary emotions to modes of Autonomic functioning seemingly flies in the face of and is contradicted by Barrett's constructionist account of emotion in which distinct primary emotions are not natural kinds and have no autonomic, neurological, physiological, etc signatures that all categorical members share (Barrett, 2007). Additionally, there are many hypothetical variants of a primary emotion like Anger which varies considerably in manifestations such as quietly seething, hotly exploding from injustice, coldly simmering in resentment, icily wryly smiling with revenge in mind, all different types of autonomic and physiological states of Core Affect (Russell, 1987)(Barrett, 2003), even if anecdotal. Likewise, Fear, Depression, and Satisfaction have many autonomic variances and no distinct signature, as well as no distinct involuntary facial signatures that occur with all instances, in opposition to Ekman's universal facial signatures (Barrett, 2007). Instead, according to constructionist accounts, emotions have conceptual cores (Wilson-Mendenhall *et al.*, 2010) organized around language, which is culturally defined although constrained neurophysiologically.

This study's offering of a set of primitive emotion categories corresponding to modes of the autonomic nervous system must be reconciled with Barrett's constructionist theory. However, the autonomic modes "are intended as taxonomic descriptors of empirical patterns of ANS response, and may not map isomorphically onto functionally distinct underlying mechanisms" (Berntson, Cacioppo, & Quigley, 1991: 460). While Autonomic modes are idealized states on a 2-D functional map of autonomic space, qualifying the exact state of the sympathetic and parasympathetic nervous systems is inexact (Berntson *et al.*, 1997). The PNS and SNS are connected to all the internal viscera and subject to opponent control mechanism via both vagal afferents and sympathetic afferents, as well as neuroendocrinal mechanisms for change via the HPA-axis (Craig, 2006). Moreover, internal monitoring of autonomic activity is exceedingly difficult (Berntson *et al.*, 1997), and external

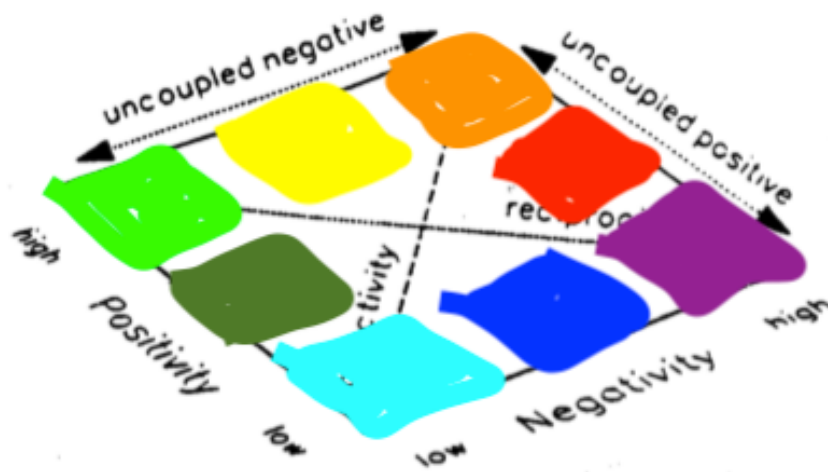
monitoring of physiological markers (e.g., heart rate, heart rate variability, blood pressure, finger temperature) often produce contradictory and ambiguous results under laboratory test conditions (Kreibig, 2010). Most studies of ANS function and emotion fail methodologically to be able to test both emotion coherence and specificity (Levenson, 2014). Experimental design must include empirical monitoring across levels (subjective, behavioral, physiological), temporal response across time, and coherence/specificity at the time of emotional experience (Levenson, 2014). However, while SNS and PNS activation may be notoriously difficult to observe and measure, every brain is tracking all of these data internally as part of allostatic regulation, thus, itself may associate autonomic response actions with situated conceptualizations as part of automatic, subconscious processes.

Autonomic functioning may be better envisioned as a functional autonomic space in which sympathetic and parasympathetic systems may be in states that are considered co-activated, co-inhibited, reciprocally related or uncoupled, producing a functional surface over which the complex interplay of sympathetic and parasympathetic activation and response can be better understood (Berntson, Cacioppo, & Quigley 1991). This revisioning of SNS and PNS covariance allows for more accurate psychophysiological models of graded levels of sympathetic and parasympathetic functioning (Berntson, Cacioppo, & Quigley 1991). The 2-D planes showing bivariate autonomic (Berntson, Cacioppo, & Quigley, 1991) and evaluative (Cacioppo & Berntson, 1994) functional surfaces, are both highly abstract models of complex autonomic functional states in flux. The orientation of the two functional surfaces in those papers are not oriented the same, but coloring regions of both maps with corresponding Emotion Modes from **Fig. 24.2** and **Fig. 24.3** help show their relation:

## Autonomic Space & Overlying Functional Surface



**Fig. 24.4** - Autonomic 2-D Functional Surface w/ Modes -  
 Source: Berntson, Cacioppo, & Quigley (1991: 463, Table 1)



**Fig. 24.5** - Bivariate Evaluative Plane w/ Modes -  
 Source: Cacioppo & Berntson (1994: 402, Fig. 1)



Both **Fig. 24.4** and **Fig. 24.5** can be shown to be equivalent 2-D surfaces which orient isomorphically with the underlying functioning of the ANS the basis of the model. Importantly, the emotion “cells” mapped to each graph is incorrect, since the Modes of Autonomic Control are not regions within the functional 2-D state map, but vectors of autonomic “adjustment” from an infinite graph of autonomic state points. Thus, the colored squares in **Fig. 24.4** and **Fig. 24.5** are simply there to show the alignment of the two graphs, not the “location” of emotion color cells. Instead, the color cells are distributed information

The bivariate evaluative plane rolls up activity in the 2-D plane, but contains both valence and activation, making these models of Core Affect, which is orthogonal to the plane of the Social Self Model (Kervyn, *et al.*, 2013). However, the avoidance and approach are the basic, orthogonal universal dimensions of the Social Self Model, so both **Fig. 24.4** and **Fig. 24.5** are rolling up three dimensions into a 2-D functional surface. To understand emotion categorization requires three dimensions, for which the Semantic Differential’s EPA dimensions of Evaluation, Potency, and Activity define the universal orthogonal dimensions of affect in semantic meaning space (Kemper, 1978). However, this study posits it may be possible to show the 3-D EPA semantic meaning space is equivalent to the Autonomic 2-D functional space.

Young children, when first learning language, identify, indirectly, the key to understanding how the three dimensions of affect and nine autonomic functioning can be seen to be equivalent, simply by the subject matter of their early language focus:

*“Among the very first things very young children talk about are desires, perceptions and emotions...(about) what they and others want, see, and feel, rather than what they know or think about.” Gopnik et al. (1999: 42-43)*

Desires, perceptions and emotions represent distinct mental states, which as the focus of early language, must mean they are operationally functional in children. They correspond with and are produced by what Barrett (2011) terms psychological primitives: the Conceptual System, Controlled Attention, and Core Affect, respectively. Psychological primitives are functional, information processing systems recruited to produce affective mental states and the experience of emotion states (Barrett, 2011). Even before linguistic fluency, children have developed not simply interest in others’

and their own mental states, but the very mental state capabilities present from birth and developed through intersubjective engagement with caregivers wiring up right hemispheric dominant emotion capabilities (Schore, 2006). By the second year, as language is emerging and brain growth becomes left hemispheric dominant during intensive myelination (Schore, 2006), the visceromotor regions (Barrett, 2017) processing desires, perceptions, and emotions must already be functionally wired to be able to be coordinated through meaning systems in EPA affective space.

This study posits that the EPA dimensions of Evaluation (E), Potency (P), and Activity (A) are the feeling space upon which the psychological primitive functional systems of the Conceptual System, Controlled attention, and Core Affect (Barrett, 2005) operate, and that these affective dimensions are equivalent to the 2-D autonomic functional space identified by Berntson, Cacioppo, & Quigley (1991).

The key to conceptualizing this rather abstract conjecture can be found in a note by Kemper (1978):

*“The three Semantic Differential factors are not homogeneous with respect to their underlying form. Specifically, potency and activity are properties of the stimulus that is being evaluated. On the other hand, evaluation is a property of the evaluator...thus, although there is some parallelism between activity (technical), potency (power), and evaluation (status), the parallelism breaks down at an important point. The technical, power, and status factors refer exclusively to the stimulus, whereas in the SD tradition, the activity and potency factors refer to the stimulus, and the evaluations factor refers to the evaluator or rater.” Kemper (1978: 366)*

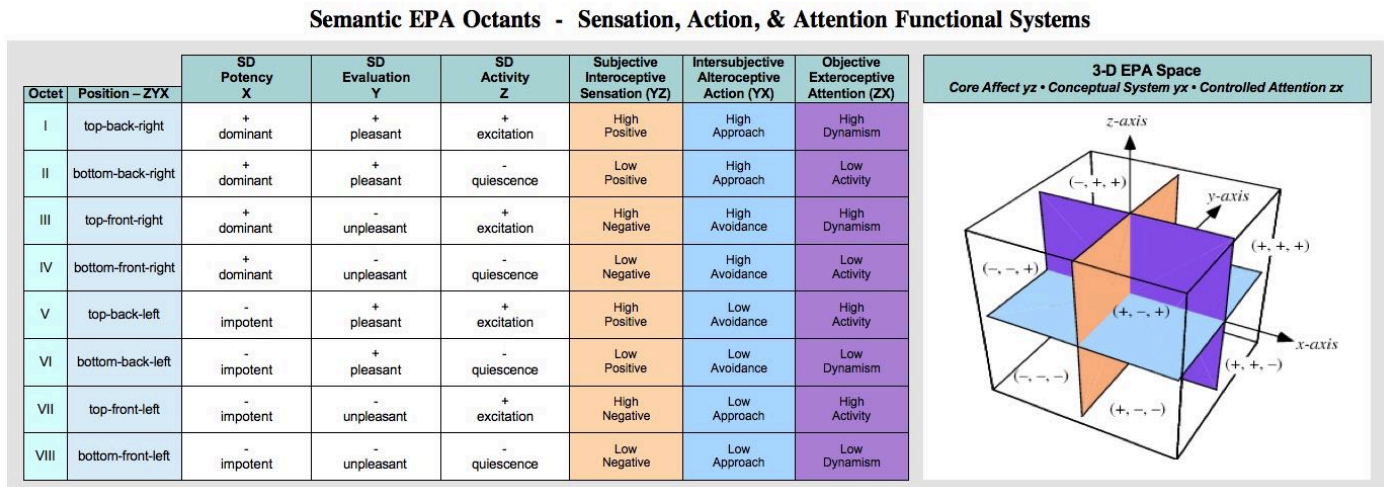
Potency and Activity are aspects of external stimuli gathered through an external perceptual system filtered by the salience network’s amygdala utilizing controlled attention via different exteroceptive sensory (visual, auditory, olfaction, kinesthetic, taste) modalities directly as cognitive representations, rather than as some amodal perceptual intermediary that must then must be translated to representational form (Barsalou, 2017). Evaluation is a categorization of the cognitively represented stimuli at a higher logical type (Edelman, 1987), with the resulting three EPA data points representing two levels of information. In the context of the external perception system, evaluation is an internal measure of cognitive representations of externally observed stimuli conceptually situated.

Similarly, Affect and Evaluation are central subjective affective sensations felt by the self, registering as the hedonic valence and activation dimensions of core affect (Russell, 2003), representing a valuation and a categorization of autonomic nervous system activation gained through proprio- and interoception for a conceptualized situation. The value and category of the subjective feeling state serve as information for selective action response with regard to the current situation, which in some sense can be seen as expressed in the potency dimension determined by a sympathetic-parasympathetic dynamic. However, the value of Core Affect, while identified as positive or negative valence has been found to be separable as superordinate categories, where evaluative functions of core affect may reflect an action tendency towards a positive or away from a negative action outcome, while the motivation towards in approach or away in withdrawal are separable producing a bivariate evaluative field (**Fig. 24.5**).

The externally focused exteroceptive perception system essentially model the feeling state of Alter observationally while the internal focused interoceptive perception system models Ego subjectively. A third functional system modeling the conceptual space of social action of Alter and Ego can be coordinated with the external and internal perception systems via those model's "computed" dimensions, Evaluation and Potency, the dimensions of the Social Self Model's space, where Activity becomes the computed dimension, ie difference between current state and predicted state given the current social situation. The 3-D EPA affective space constructed from the three EPA orthogonal dimensions within which the Semantic Differential locates all semantic meaning (Osgood, Suci, & Tannenbaum, 1962), can also be conceptualized as composed of a triad of orthogonal 2-D sub-planes, with each sub plane containing two of the orthogonal dimensions.

Hypothetically, these EPA 2-D sub-planes measure covariance of two EPA dimensions corresponding to a functional plane of a psychological primitive (Barrett, 2011). The functional affective planes represent internal feeling space (Core Affect), intersubjective social interaction space (Social Conceptual System), and external attention space (Controlled Attention), each corresponding to functional systems from which emerges the fundamental perspectives of the subjective, the interactive, the objective. In a sense, these are akin to separate channels of perception as in Intrinsic Motive Formation (IMF) channels (**Fig. 9.3**), from which the basic affects guide intrinsic motivations, over which extrinsic motivations organized by semantic language assert some hierarchic

control over through controlled processes of conscious action selection (**Fig. 9.6**). The semantic dimensions of affect must map to the affective intrinsic motivational space, with each of the three orthogonal EPA sub-planes producing an octant model, as visualized below:



**Fig. 24.6** - Semantic EPA Octants locating Sensation, Action, & Attention Functional Systems -

*Source: graph image Weisstein (2020)*

The 3-D cube on the right in **Fig. 24.6**, has eight Octants formed by the intersection of the three quadrant sub planes. The three EPA dimensions are arbitrarily mapped to the coordinate lines of  $x$  = Potency,  $y$  = Evaluation, and  $z$  = Activity. The **Core Affect** circumplex space of **Fig. 12.1** mapping sensation has valence & activation dimensions, corresponding to evaluation ( $y$ -axis) and activity ( $z$ -axis), respectively. The **Social Self** quadrant model representing conceptual social action space mapping status & power, corresponding to evaluation ( $y$ -axis) & potency ( $x$ -axis). The **Categorical Representation** quadrant model representing directed attention maps direct physical attributes of potency ( $x$ -axis) & activation ( $z$ -axis).

Because the coordinate axes in the octant figure to the right in **Fig. 24.6** represent EPA dimensions, the universal dimensions of the Social Self Mode are towards the corners of the light blue 2-D plane. The Potency = Power ( $x$ -axis) and Evaluation = Status ( $y$ -axis) diagonals are offset at a  $45^\circ$  angle from the universal dimensions of the social self model, meaning the octant cubes in the diagram to the right do not align with SSM quadrants but rather bisect them. Activity ( $z$ -axis) is orthogonal to the potency & evaluation plan, thus Core Affect maps to the orange 2-D plane in **Fig. 12.1**, where Pleasantness orients towards the positive  $y$ -axis (back) and Activation towards the positive  $z$ -axis

(top) and Deactivated the negative z-axis (bottom). Orthogonal to the orange Core Affect plane is the x-axis, running from high potency (right) to low potency (left). Thus, a 3-D octant model of the semantic space on the right mapped to the emotion “cells” cannot be easily envisioned.

For example, the Satisfaction “octant” would cluster as a 3-D bubble around the positive y-axis (Octants I, II, V, VI), rather than occupying one complete octant space. Similarly, uncoupled emotions space cluster along the other cardinal directions in the Interactional plane, with Anger around the positive x-axis (right octants), Fear around the negative y-axis (front octants), and Depression around the negative x-axis (left octants). Thus, they would appear in cross sections of the core affect plane as in **Fig. 12.2**, across four octants, allowing for variability of these “primary” emotion categorizations rather than “natural kinds” (Barrett, 2006; 2011).

The bivariate diagram above showing ANS functional space (**Fig. 24.4**) and EMS positivity & negativity dimensions (**Fig. 24.4**) imply the Parasympathetic matches the positivity dimension while the Sympathetic matches the Negativity dimension. Oriented to EPA space and the octant figure would align Positivity congruent with the Evaluative y-axis running from low positivity (front) to high positivity (back), while Negativity would align parallel with the Potency x-axis running from low negativity (left) to high negativity (right).

Placement of the Surprise-Anticipation emotion “octants” align with polarities towards the octant corners in **Fig. 24.6**. Anticipation corresponds to the coupled, co-activation ANS mode that would occupy the high Positivity and high Negativity corner with positive activation (back-top-right octant), while Surprise would occupy the low Positivity and low Negativity corner octants with negative activation (front-bottom-left octant). However, co-activation of the Sympathetic and Parasympathetic doesn’t necessarily correspond with the high Activity. Using the Autonomic surface as a guide (**Fig. 24.4**), the Satisfaction category cluster would share the Anticipation & Trust octants (back), while Fear would share the Surprise & Disgust octants (front), Depression the Surprise & Trust octants (left), and Anger the Anticipation & Disgust octants (right). This would make the Semantic EPA octants the Prediction and Motivational spaces over which expectations and sanctions of social behavior source their decision making upon.

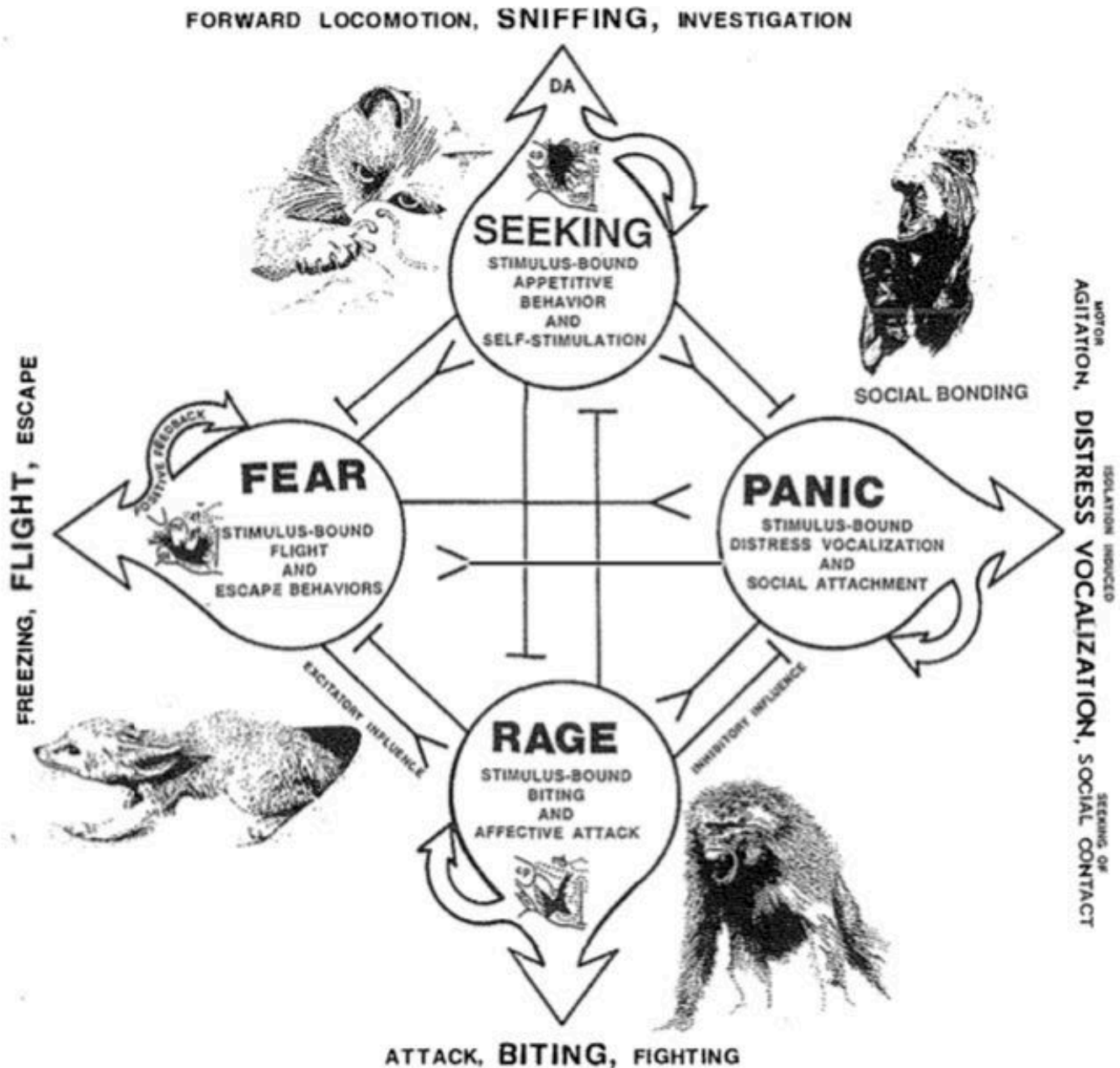
In addition to Autonomic modes, the Octant space might also be able to be correlated with Lövheim’s

(2012) 3-D model of emotion from the three main monoamine neurotransmitters (**Fig. 9.7**), with Serotonin (5 H-T), Dopamine (DA), and Noradrenaline (NE) acting as “the final pathway” in delivering emotion information across the brain. However, the two cubic spaces do not agree. Rather than each of these neurotransmitters defining the three emotion sub-planes in **Fig. 24.6**, they instead bisect the Octant cubic along two diagonals. This study posits the all high level of 5 H-T, DA, and NE corresponds to the top-back-right corner, where Interest/Excitement matches the Anticipation mode of the ANS. Oppositely in the octant model above in the bottom-front-right corner, Surprise mode of the ANS would correspond to a low level of DA while 5-HT and NE are high. The Satisfaction to Depression uncoupled parasympathetic axis of the ANS would correspond to both having low levels of NE, but Satisfaction having high levels of both Serotonin (5 H-T) and Dopamine (DA), while Depression has low levels of all three, corresponding to Tomkins’ Shame/Humiliation emotion category. The Anger to Fear uncoupled sympathetic axis of the ANS would correspond to variations of levels of NE running from with high levels of Dopamine and low levels of Serotonin. Because of the non-alignment of several emotion terms between the two models, the other two neurotransmitter dimensions are more difficult to match, although it appears several negative affect states in Lovheim’s emotion space (Distress/Anguish, Fear/Terror, Anger/Rage) vary in their levels of Dopamine and Noradrenaline, with Serotonin low for all. While the Tomkins data characterizes a Disgust/Contempt state as one with high 5 H-T and low DA & NE, no corresponding Trust state exists in the model, with the closest matching a high parasympathetic / low sympathetic state, which would likely most closely match the addition of high 5-HT & DA, low NE plus an additional neurotransmitter, or most likely, a high level of the Oxytocin neuropeptide (Carter, 2014). A congruency between these two 3-D spaces is not clear without further investigation.

Adjustments to the SNS and PNS are effected by a neural control system which must make decisions based upon different aspects of motivation, which according to the intrinsic-extrinsic motivation emotion model (**Fig. 9.6**) are mediated by the nucleus accumbens (NAcc) of the ventral striatum, which chooses an action option based upon inputs into the striatum from different key brain regions that also are processing different aspects of emotion (**Fig. 11.5**) (Cromwell *et al.*, 2020). According to the model, motivation originates in reward-based approach or seeking, which is maintained by higher cognitive functions monitoring progress using value based decision making. Error detection is computed of the readiness or progress of action towards rewards, which allows for adjustments based valuation of past outcomes, while the environment is constantly monitored for salient cues,

which too are evaluated and used towards adjusting action options.

Panksepp's (1998) study of innate animal affects offered seven primary affects evoked by stimuli under uncertainty. These are held in common with other mammals sharing the same midline brain architecture, while a subset of primary affects are shared with a wider set of species, specifically a core four that seem to be shared by all vertebrates. FEAR, RAGE, PANIC, and SEEKING elicit prototype social behaviors across species, as well as having a recognizable set of inhibitory and excitatory dynamics on each other. While adjustments to the SNS and PNS occur over very short durations (eg 1/40 of a second), these four behavioral prototypes can be seen as prototype behaviors dependent upon uncoupled modes of autonomic activation and withdrawal under uncertainty.



**Fig. 24.7** - The Primary Emotional Operating Systems - *Source: Panksepp (1998: 53, Fig. 3.5)*

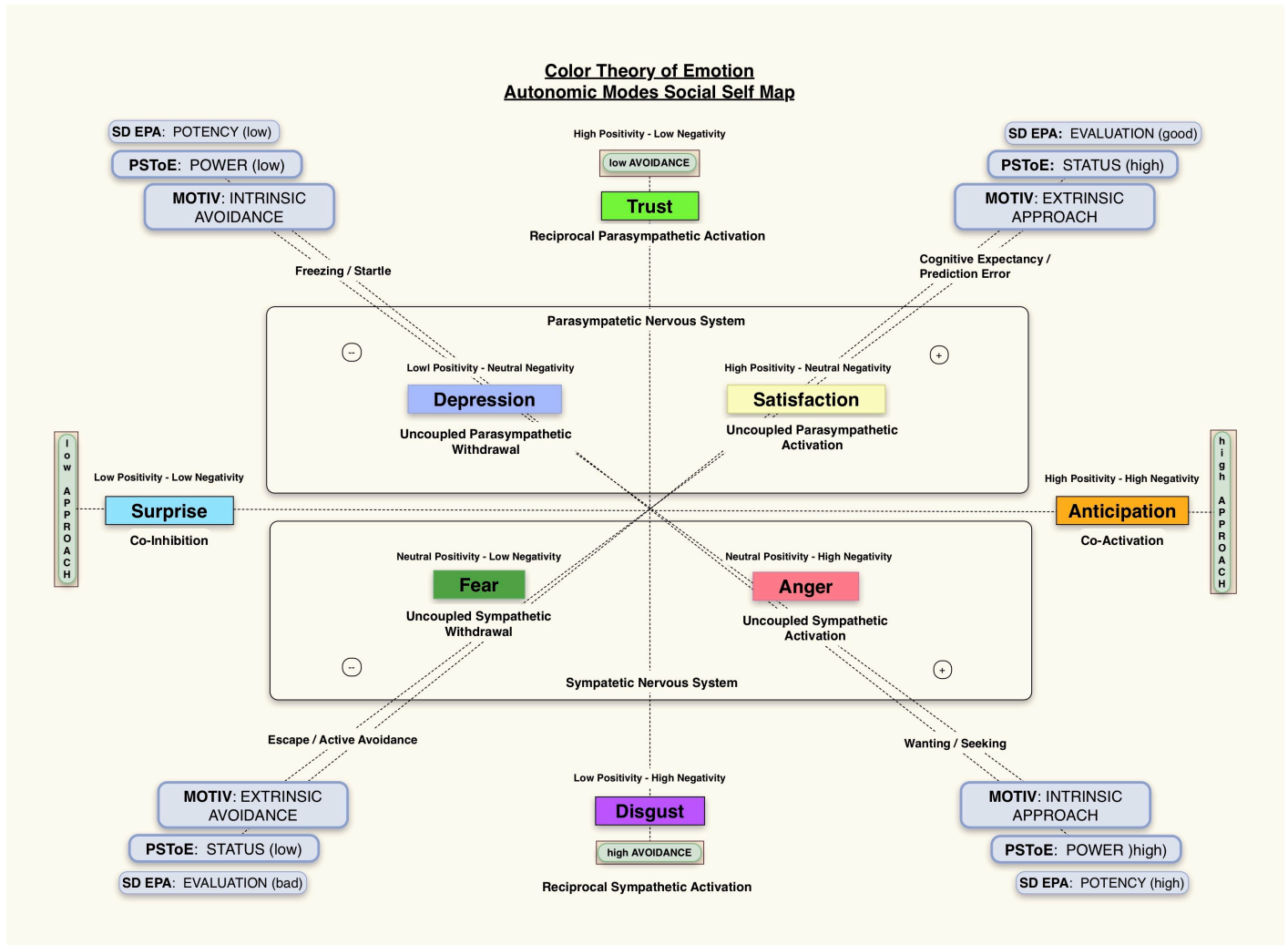
Runaway sympathetic withdrawal results in FEAR responses, while uncoupled sympathetic activation results in RAGE. Similarly, runaway parasympathetic withdrawal results in PANIC or distress, while parasympathetic activation results in relaxing threat defense allowing default SEEKING. The switching of primary affects at the primary-process level forwards predictive adjustments in the PAG to subcortical nuclei connected directly to SSN and PSN afferents (Porges, 2001). Since one behavioral response is possible for any given time slice, in a generalized sense, these primary affect outputs could be seen as uncoupled adjustments to either the SSN or PSN for



any given moment, thus FEAR, RAGE, PANIC, and SEEKING could be seen as innate reactions from modes of ANS adjustment: SNS withdrawal (-), SNS activation (+), PNS withdrawal (-), PNS activation (+), respectively.

Given that sympathetic controls are , the directions of autonomic (+) or (-) adjustments to the SNS and PNS, which simultaneously adjust the Predictive readiness and Motivational state for the next moment, could be the intrinsic or extrinsic affects FEAR - SNS (-), RAGE - SNS(+), PANIC - PNS (-), and SEEKING - PNS (+). Such positive and negative adjustments could correspond to the notion of approach or avoidance, for both intrinsic and extrinsic motivation, where the color cells of **Fig. 9.9** represent categorized action responses to switching done by the nucleus accumbens (NACC) (cf Cromwell *et al.*, 2020) correlated with similar response modes represented by adjustments to Polyvagal theory's emotion subsystem dynamics of the ANS, Funkstein's hormone responses, PARCS's neuromodulators, and psychological defense responses.

The processes of allostasis (Sterling, 2012) provide regulation of the ANS, and all other systems, by predictively making responsive adjustments in preparation for the next moment tied to the computation of error described by the Theory of Constructed Emotion (Barrett, 2017). Thus, the ANS is always in a constant flux of micro adjustments via neuroendocrine and autonomic pathways to be ready in social interaction. The Autonomic control process's Comparator functions in the executive controls could abstractly track the changing state of the ANS, for which autonomic adjustments are tracked for both choosing next action (basic ANS adjustments), comparing prediction errors from predicted states (), and tracking The variance of Prediction and Motivation emotion cells would then always be in flux, representing different ways of monitoring the Autonomic 2-D functional space.



**Fig. 24.8** - Modes of Autonomic Control Social Self Mapping

**Fig. 24.8** shows the Social Self map with perpendicular dimensions of Approach (horizontal) and Avoidance (vertical), aligning it with the 2-D bivariate functional plane (Berntson, Cacioppo, & Quigley, 1991), which aligns also with the transform of the Positivity and Negativity perpendicular dimensions of the bivariate evaluative plane (Cacioppo & Berntson, 1994). The modes of autonomic control align with differences of SNS and PNS activation and withdrawal, which can be located as response modes on the Social Self Model relating to separable dimensions of motivation, as separate systems produce approach and avoidance responses (Tops *et al.*, 2010).

Following the logic of the **Fig. 24.8**, the degree of synchrony of the SNS and PNS reflect a prediction continuum running from Anticipation when co-activated to Surprise when co-inhibited. The degree of reciprocal difference between the SNS and PNS reflect the affiliative response dimension ranging from Trust when PNS reciprocally activated to Disgust when SNS reciprocally activated. These two

modes agree in orientation with the Universal Dimensions across analytics related to group dynamics of Inclusion/Exclusion. VVC activation leads to affiliative behavior producing feelings of Trust in the Social Warmth/high Community direction. In the opposite direction, Social Coldness/low Community typify Sympathetic activation combined with PNS withdrawal. Moral disgust has been shown to have an Autonomic signature SNS reciprocal activation, differing from physiological disgust, which differentiates the Disgust in the Social Self Model's evaluative plane as sociomoral (Ottaviani *et al.*, 2013), thought to have been repurposed by social judgment (Rozin *et al.*, 1999).

The diagonals of the Social Self Model, aligning with the orientation of the BIAS evaluative emotions (Cuddy *et al.*, 2008), also align with the intrinsic and extrinsic responses of either approach or avoidance in **Fig. 9.5** summarized along with correlations with other motivation emotion theory modes in **Fig. 9.6**. The intrinsic approach and avoidance responses represent more ancient motivation systems yielding a wanting/seeking approach and an immobilizing startle/fear avoidance. The extrinsic approach and avoidance responses represent more recent motivation systems yielding cognitive mediation of extrinsic stimuli which presents options for attention and response.

The intrinsic-extrinsic motivational dimensions help to map not simply the primary emotion responses, but also the Anticipation-Surprise and Trust-Disgust emotion cells of **Fig. 24.8** parallel with the vertical and horizontal axes of the Social Self Map. Both intrinsic approach and extrinsic approach align with high approach, with the former representing anticipatory desire to satisfy a goal, while the latter representing cognitive expectancy of readiness and computation of prediction error, both of which are congruent with Anticipation emotion response. Their opposites are not avoidance, but rather low approach. The low approach side is characterized by the startle and escape responses congruent with Surprise emotion response. Perpendicular to the horizontal avoidance dimension would be the vertical dimension representing low avoidance at top traced downward to high avoidance, representing reciprocal differences in parasympathetic versus sympathetic activation. The Disgust emotion response would be congruent with the high avoidance response towards a stimuli, which would make it extrinsically motivated, whereas, the Trust emotion response would be congruent in cases where the motivation is one inherent in some internal goal pursuit, of either positive or negative valence.

An adjustment of SNS activation could be categorized as Anger across many different positions in

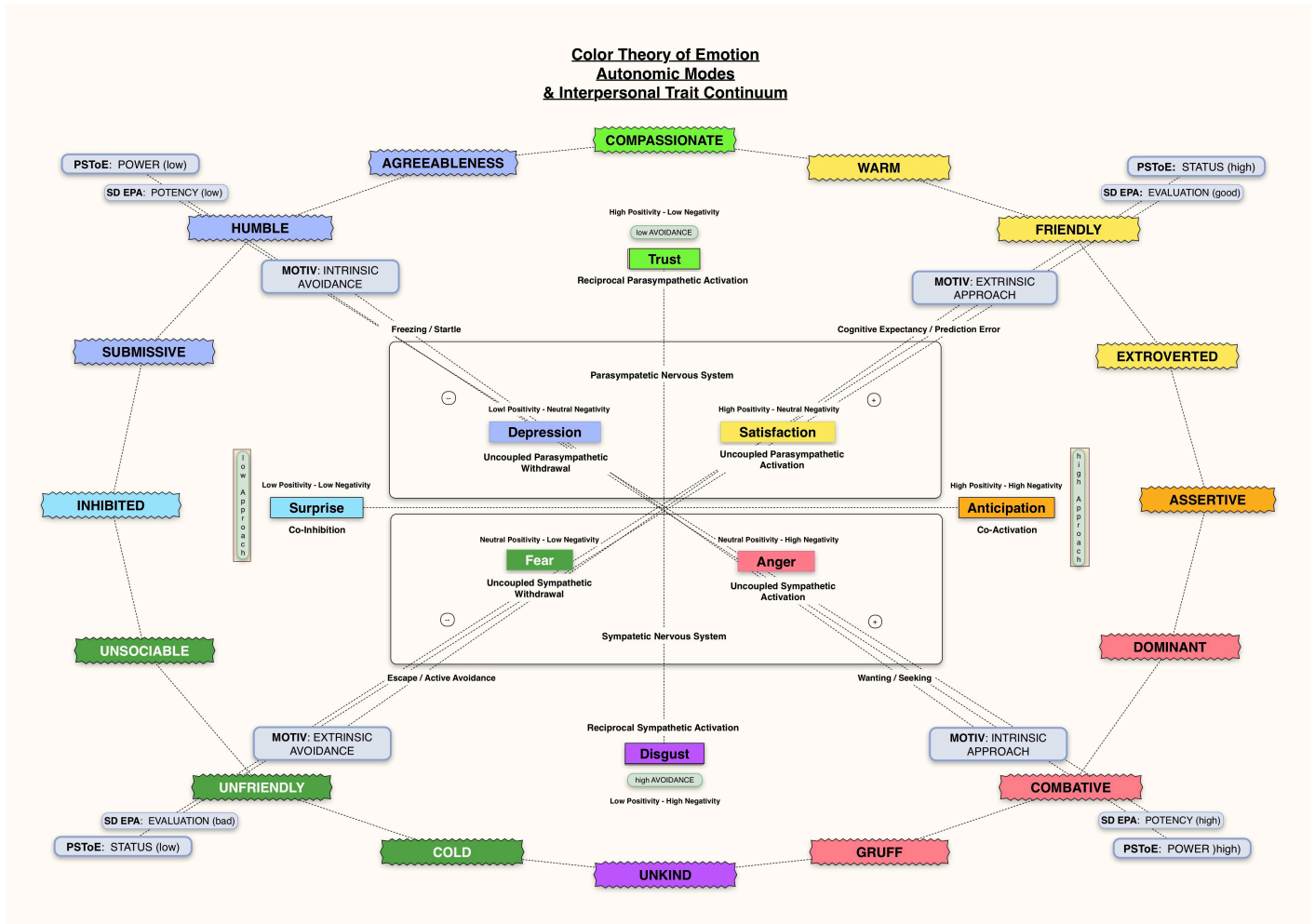
autonomic 2-D functional space, and similarly so too could Fear, Satisfaction, and Depression “primaries” be located in various ANS functional space regions as vectors towards SNS withdrawal, PNS activation, and PNS withdrawal, respectively. Thus, each of the Anger, Fear, Satisfaction, and Depression would have so many instances of differing autonomic signatures to make a “natural kind” conception of them seem implausible, while still representing a natural primary mode of categorization that could be tracked internally and autonomously by evaluative processes in the executive controls deciding micro-adjustments.

Furthermore, these (+) or (-) adjustments to the SNS and PNS tied to the executive controls’ automatic appraisals would provide a model of the adjustments to the subjective Core Affect psychological primitive and the objective Controlled Attention perceptual psychological primitive coordinated with the intersubjective Social Conceptual System psychological primitive’s predictive and motivational social plane. This would help to locate cardinal directions of the Social Self Model in relation to Prediction and Motivational axes, as well as the placement of uncoupled primaries and SNS / PNS generalized modes. Intensity a (+) and (-) adjustments to each of these modes come from PFC tagging of prediction error, resulting in more disparate reciprocal responses, in the case of approach, or more align co-activated responses.

Such a theoretical model of emotion would be able to account for the constant flux of Core Affect’s valence and activation experienced as subjective feeling states influenced by current situation that can serve as a somatic marker of the event (Damasio, 2010) describe the subjective domain which produces the category of *firstness*. The experience of predictive readiness and motivational direction for action (approach or avoidance) in relation to another social being describe the interpersonal domain which produces the category of *secondness*. And categorical perception of external affective stimuli in relation to internal affective interoception provides an objective feeling of interaction, producing the category of *thirdness*. These three categories of knowing are facilitated through the medium of affect. These are the symbolic dimensions that Symbolic Interactionism (Blumer, 1969) posits humans seek to understand their own and others’ social behavior symbolically, through conceptual relations located in 3-Dimensional affective EPA space, the product of the functional map of the autonomic system.

Moreover, the 2-D planes of EPA space correspond to the functional systems not simply integrate

perspectival experiences, but are in fact the source of patterns acting as constraints across all social sciences, from psychological primitives, to personality traits, to social structural systems, to cultural meaning system. Analysis of the Big 5 personality traits found three sets of pairings which displayed circumplexity, that is, orthogonal covariation producing a space in which subtraits were found to be combinations of the two orthogonal Big 5. While envisioned in 2-D as circular relations due to the analytic methodology in relating trait positions around a circle, these are in fact 2-D planes with two orthogonal axes, three in all produced by three orthogonal dimensions (Big 5 domains). Saucier (1992) found an Extraversion (I) - Neuroticism (IV) circumplex from which traits related to affect are located, and Extraversion (I) - Agreeableness (II) circumplex from which traits related to the interpersonal are located, and an Agreeableness (II) - Neuroticism (IV) “mixed” circumplex which combined the outward behavioral domain with the inward feeling domain. Core affect, interpersonal motivation, and categorical perception. Conscientiousness (III) and Openness/Intellect (V) personality domains differ in kind from these three, which this study will further elucidate in later chapters as it builds an Integral analytic. However, this triad (I, II, IV) correspond to EPA space created by autonomic functional space (**Fig. 24.6**) through which humans, and likely all animals, coordinate Core Affect, Social Conceptual System and Controlled Attention psychological primitives.



**Fig. 24.9** - Modes of Autonomic Control Social Self Mapping & Semantic Personality Traits

The encircling list of trait terms in **Fig. 24.9** around the Social Self Map shows the relation of a selection of interpersonal trait terms according to their facet position along the interpersonal circumplex structure produced by Extraversion (I) and Agreeableness (II) (Hofstee, de Raad, & Goldberg, 1992). Their relation to nearby autonomic modes, aided by similar color coding, is suggestive of some relation of semantic trait terms to autonomic bivalent space, although only hypothesized. The axes of the Social Self Modes, particularly in the motivational covarying dimensions of Avoidance and Approach, as well as the intrinsic and extrinsic motive diagonals, provide an additional dimension of correspondence and anchor the semantic trait terms in motivational space. The correspondence of the motivational plane to Power Status and the Evaluation and Potency plane of EPA space provide additional analytics for validity confirmation.

Cognition, affect, and perception (thinking, feeling, and awareness) are not separate ontologically, but aspects of information processing in the brain (Duncan & Barrett, 2007). The EPA “affective”

dimensions, when taken in pairs, can represent different perspectives on information processing from an external observational human perspective, differentiated as part of a reduction in order to grasp the production of connotative meaning from complex neurophysiology. However, those differences are not ontological realities, but rather subject to the Psychologist's Fallacy, about which *"Dewey (1894) wrote, 'is to confuse the standpoint of the observer and explainer with that of the fact observed' (p. 555; see also James, 1890/1950, p. 196)"* (Duncan & Barrett, 2007: 1185).

This study posits this affective connotative EPA space emerges from the opponent control functioning of the three emotion subsystems of the autonomic nervous system, corresponding to the autonomic functional space located across functional brain and body regions, connecting the system of inner feeling to the representation of all that we know symbolically. The symbolic system that emerges from the cultural coordination of internal affect to external concepts via these three functional systems produce the subjective, intersubjective, and objective perspectives. The human ANS has evolved in such a way as to support the detached symbolic reference to this affective system allowing us to communicate very discretely about our subjective realities. It may be that other species share a similar autonomic space used by their automated control processes to modulate behavior, albeit perhaps not likely not symbolically. However, humans not only can benefit from its adaptive value, but also become consciously aware of this system.

With a testable Color Theory of Emotion, it would be possible to map a complete emotion taxonomy by integrating Thamm's E-S paradigm with the opponent control system of the ANS to situate emotions in microinteraction correlated with autonomic functioning and semantic meaning.

## CHAPTER TWENTY-FIVE

### Social Structure & Emotion

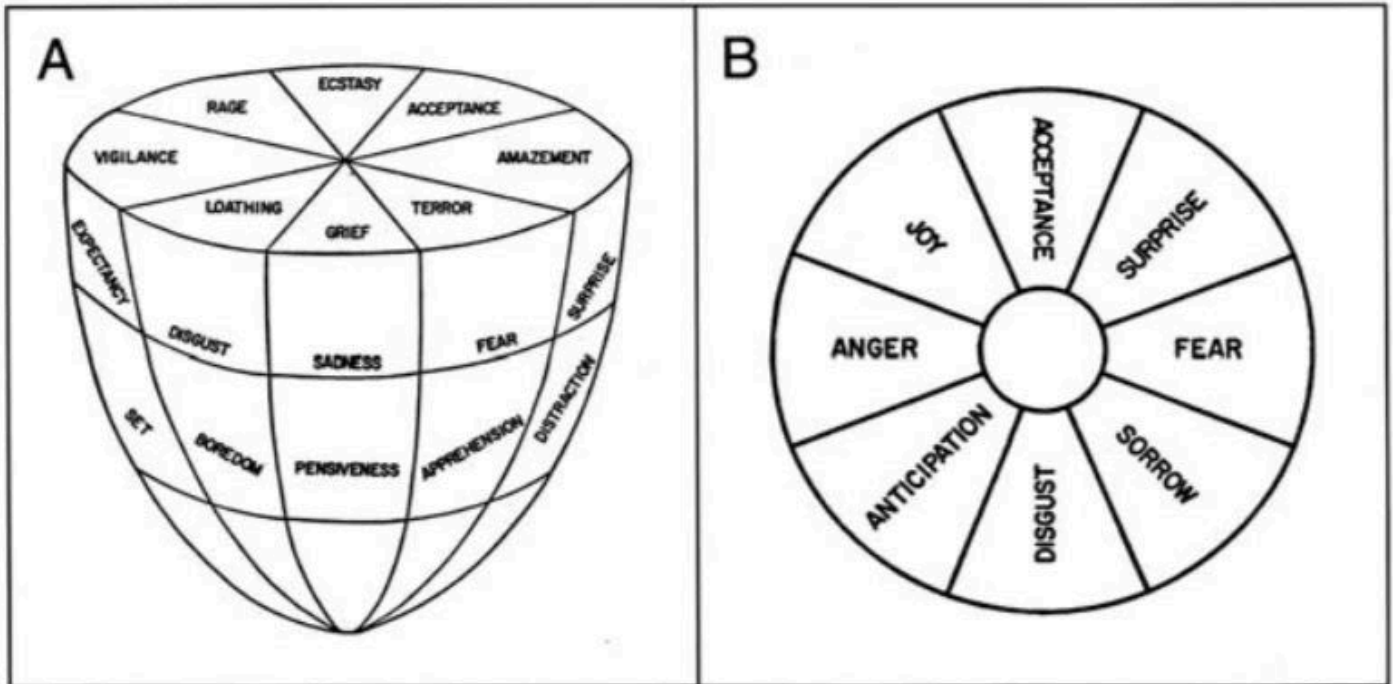
*“Power-status attributions, distributions, and interactions are components of universal social structures, and when appraised predict universal complex emotions syndromes.”*

*Thamm (2004: 207)*

A Color Theory of Emotion can be used to integrate Sociological, Psychological and Neurophysiological theories of emotion, connecting Plutchik’s Evolutionary Emotion Theory (2001), the OCC model (Ortony, Clore & Collins, 1988), Affect Regulation (Schore, 2000), Polyvagal Theory (Porges, 2010), Barrett (2017), and Power/Status Theory of Emotion (Kemper, 1978)(Thamm, 1992, 2004, 2007), making it possible to connect micro and macro emotion theory in relation to autonomic functioning, account for emotion blending, and ultimately allow for a complete emotion taxonomy. Tenhouten (2007) provides a general theory of emotion integrating Plutchik’s primary emotions with Kemper’s (1978) Power Status theory, creating a scaffolding with which to connect all these theories of emotion.

Tenhouten’s (2007) general theory of emotion and social life proposes an emotion taxonomy from different orders of emotion blends of emotion primaries according to their placement upon Plutchik’s emotion wheel. Additionally, Tenhouten characterizes emotions as socially based and proposes an integration of his emotion taxonomy with Kemper’s (1978) Power Status Theory of Emotion (PSToE). Tenhouten (2007) provides an emotion taxonomy based upon different orderings of dyadic emotion blends, offering primary, secondary, tertiary and quaternary dyad blends which differ based upon position of the primaries in Plutchik’s wheel. However, Tenhouten’s emotion taxonomy uses the 1962 version of Plutchik’s wheel, which arranged the eight primaries in a slightly different placement ordering than Plutchik’s more recent Emotion Circumplex in **Fig. 6.3**.





**Fig. 25.1** - Plutchik's 1962 Emotion Wheel -

*Sources:* Tenhouten (2007: 19, Fig. 2.4); Plutchik (1962/1991: 111, Fig. 1)

Plutchik's (1962/1991) earlier emotion wheel, in **Fig. 25.1** above, shows the four basic emotions of Anger & Joy and Fear & Sorrow as adjacent in the wheel, making the other emotion pairs of Anticipation & Surprise and Acceptance & Disgust adjacent as well. However in Plutchik's (2000) wheel in **Fig. 6.3**, those four basic emotions are separated by Anticipation-Surprise and Acceptance-Disgust. The difference is as simple as the Anticipation-Surprise opposite primaries shifting clockwise by one position, moving the Anger-Fear opposition primaries counter-clockwise one position, which changes the orders of some of those blends from primary to secondary or tertiary. While the emotion labels of the blends in Tenhouten (2007) against **Fig. 25.1** will match the labels for those in **Fig. 6.3**, Tenhouten's primary dyads based upon adjacent primaries in Plutchik's 1962 wheel characterize blends of Anger-Joy, Fear-Sadness, Surprise-Trust, Anticipation-Disgust as primary dyads, while in Plutchik's later wheel in **Fig. 6.3**, these would not be primary but rather secondary dyads.

However, the exact position of the Plutchik's primaries in his Circumplex wheel matters, because the different orders of primaries in **Fig. 6.3** yield a set of structural emotions which agree with the Power Status Theory of Emotion (Kemper, 1978), while the 1962 wheel does not. Specifically, the difference between wheel order conflicts with Thamm's (1992, 2004, 2007) structural classification

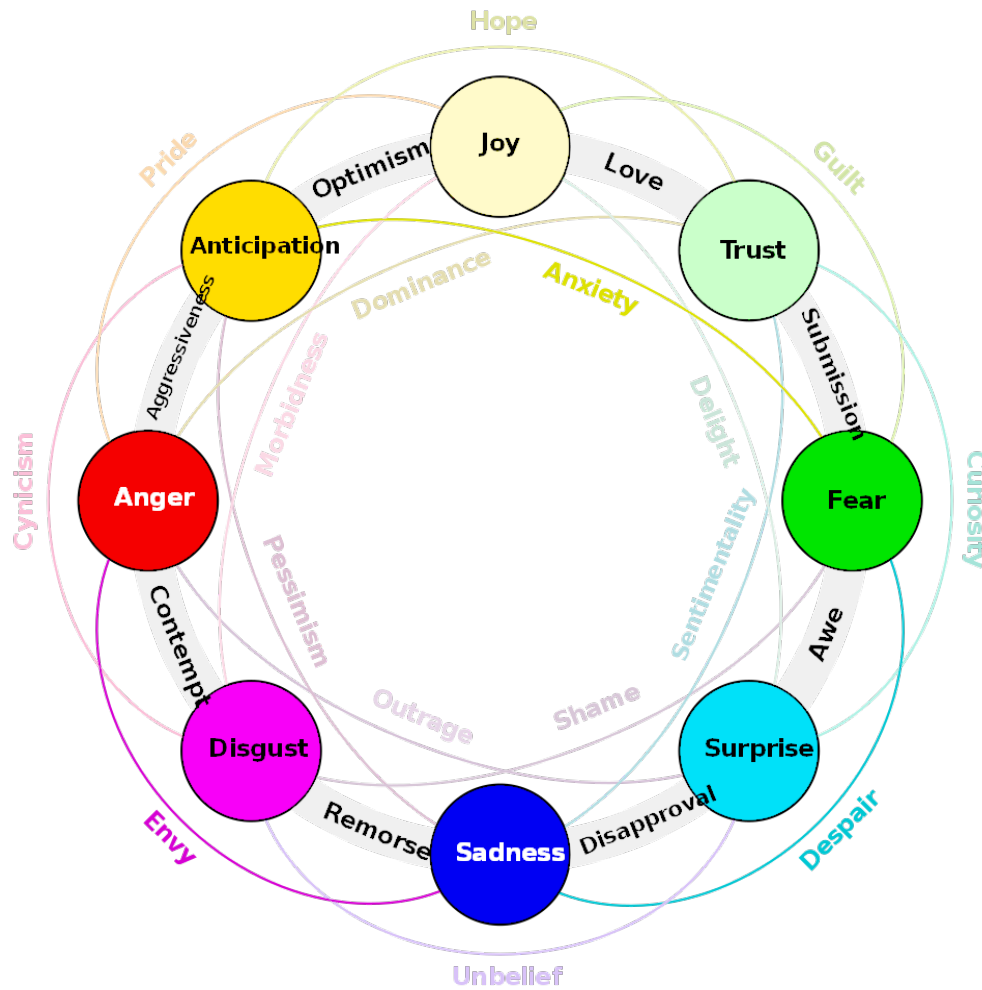
scheme integrating the Expectations/Sanctions (E/S) paradigm with Power and Status, forcing a constraint upon the blending of emotions which Tenhouten may have missed because the four basic emotions share some adjacency in the 1962 wheel.

This study posits the later Plutchik wheel (**Fig. 6.3**) aligns with Thamm's E/S paradigm, in that Anticipation & Surprise and Trust & Disgust primary opposite emotions correspond to the orthogonal dimensions of the E/S paradigm, forcing those two sets of primaries to be orthogonal and non-adjacent in the wheel. Those four primary emotions correspond to different feeling states related to Expectations and Sanctions for social behavior. The Anticipation- Surprise emotion axis represents emotions anticipatory of action, as in expectations to meet or not meet social norms. Actions which go against expectations may produce surprise and emotions which blend surprise with other primary emotions.

The Trust-Disgust emotion axis represents emotions consequent to action, as in rewards or punishments which can be compared to view the outcomes of interaction (Thamm, 2004). In the frame of Affect Control Theory, social action performance produces emotions from agreement with or divergence from identity standards. The resultant feeling states correspond to emotions which follow action related to Trust or Disgust. Thus, expectations for one's own or other's action produces an emotion corresponding to the degree one's expectations of meeting or not-meeting normative behavior for the perceived identity in the situation, an emotion which can inform about one's own performance or that of others. The resulting emotion helps to guide subsequent behavior towards the social actors' performances, with larger divergence from expectations producing flavors of surprise blended with basic primary adjustments to prepare for the next instant/social action.

Instead, this study posits Tenhouten's blending of these four primary dyad pairings to produce Hubris, Embarrassment, Curiosity, & Cynicism respectively, correspond not to primary dyads but to Self-Other comparisons of a relational dimension, producing social relation emotions analogous to Fessler's (1999) second-order emotions. Thus, these would be like Tenhouten's tertiary emotion blends, emotions from emotions, which inform the status of the social bond (Scheff, 1997). This study also postulates these would correspond to Thamm's PSToE Subtle emotion structures with DIA triad of comparison structures.

To flesh this out, consider the primary, secondary, tertiary or quaternary dyad emotions that follow from blending primary emotion dyads that are adjacent, separated by one, two, three or four positions on the emotion wheel, respectively, as seen in the figure below:



**Fig. 25.2** - Plutchik Primary, Secondary & Tertiary Dyads -  
*Sources: Tenhouten (2007); ChaoticBrain (2019)*

Primary, secondary, and tertiary emotion blends of primary emotions can be seen in **Fig. 25.2**, which shows the Anticipation-Surprise and Trust-Disgust pairs separating the four basic affects Anger, Joy, Fear, Sadness. According to Tenhouten (2007), primary dyads are the emotion blends from adjacent primaries (e.g., Anticipation + Joy -> Optimism), secondary dyads are emotion blends from primaries two positions apart (e.g., Anticipation + Trust -> Hope), while tertiary dyads are emotions blended from primaries three positions apart, (e.g., Anticipation + Fear -> Anxiety).

Tenhouten also includes quaternary emotion blends between opposites on the circle, not shown in the above figure. **Fig. 25.2** agrees with the ordering of Plutchik's later Emotion Wheel, **Fig. 6.3**. Thus, the old wheel would yield the same emotion labels between specific blends of primaries, but their nominal order classification for some would differ for those in the figure above. For example, Tenhouten's blend of Anger and Joy yield a primary blend of Pride, while in the figure above the classification is a secondary blend because they are not adjacent in that wheel, although the emotion label remains the same.

While Tenhouten's (2007) taxonomy, as well as **Fig. 25.2**, includes blends between non-adjacent emotion pairs separated two places, represented as secondary blends along the outer circle, these produce emotion blends which differ from primary and tertiary blends. With respect to the Color Theory of Emotion's mapping of Autonomic Modes of control to the Social Self Model, **Fig. 24.8**, secondary blends would hypothetically combine uncoupled basic primaries, or non-reciprocal with reciprocal in the case of the Anticipatory or Consequent emotion dimensions. Similarly, quaternary blends between opposite primaries represent reversals within a mode. This study proposes a taxonomy that leaves secondary and quaternary pairings unblended and their special status will be explained later, for their emotion labels do not represent blends but emotion state comparisons. The following taxonomy includes primary (adjacent) and tertiary (separated by three places) blends, which follows the ordering of Plutchik's newer Emotion wheel:

### Emotion Blending of Plutchik's Primaries

classification	dyad	intensity	blended emotion	valence	arousal	primary 1	primary 2	motive exp	activity
primary				-	**	Anger			
	primary	base	Contempt	-	**	Anger	Disgust	AVOID	active
	primary	base	Aggression	-	**	Anger	Anticipation	EXPECTED	passive
	tertiary	base	Dominance	-	**	Anger	Trust	APPROACH	active
	tertiary	base	Frustration	-	**	Anger	Surprise	UNEXPECTED	passive
	secondary	base	Pride	-	**	Anger	Joy		
	secondary	base	Sullenness	-	**	Anger	Sadness		
	quaternary	base	Frozeanness	-	**	Anger	Fear		
primary				+	**	Joy			
	primary	base	Optimism	+	**	Joy	Anticipation	EXPECTED	passive
	primary	base	Love	+	**	Joy	Trust	APPROACH	active
	tertiary	base	Delight	+	**	Joy	Surprise	UNEXPECTED	passive
	tertiary	base	Morbidness	+	**	Joy	Disgust	AVOID	active
	secondary	base	Pride	+	**	Joy	Anger		
	secondary	base	Guilt	+	**	Joy	Fear		
	quaternary	base	Catharsis	+	**	Joy	Sadness		
primary				-	**	Fear			
	primary	base	Submission	-	**	Fear	Trust	APPROACH	active
	primary	base	Awe	-	**	Fear	Surprise	UNEXPECTED	passive
	tertiary	base	Repugnance	-	**	Fear	Disgust	AVOID	active
	tertiary	base	Anxiety	-	**	Fear	Anticipation	EXPECTED	passive
	secondary	base	Guilt	-	**	Fear	Joy		
	secondary	base	Embarrassment	-	**	Fear	Sadness		
	quaternary	base	Frozeanness	-	**	Fear	Anger		
primary				-	**	Sadness			
	primary	base	Disapproval	-	**	Sadness	Surprise	UNEXPECTED	passive
	primary	base	Remorse	-	**	Sadness	Disgust	AVOID	active
	tertiary	base	Pessimism	-	**	Sadness	Anticipation	EXPECTED	passive
	tertiary	base	Loneliness	-	**	Sadness	Trust	APPROACH	active
	secondary	base	Embarrassment	-	**	Sadness	Fear		
	secondary	base	Sullenness	-	**	Sadness	Anger		
	quaternary	base	Catharsis	-	**	Sadness	Joy		

**Fig. 25.3** - Primary E/S Emotion Blending - Sources: Plutchik (2001); Tenhouten (2007)

While Plutchik's blending of primary emotions are limited to adjacent primaries, **Fig. 25.3** expands blending to both adjacent and reciprocal emotions, corresponding to the uncoupled ANS Mode emotion cells varying over the full reciprocal and coupled nonreciprocal ANS mode emotion cells. This is analogous to Color vision's Blue-Yellow (+B-Y, -B+Y) and Red-Green (+R-G, -R+G) cells varying over Light-Dark (+L-D, -L+D). In Color Cells of Emotion terms, the uncoupled Anger-Fear and Satisfaction-Depression (Joy & Sadness in **Fig. 25.3**) emotion cells can vary over both Anticipation-Surprise (coupled nonreciprocal) and Trust-Disgust (reciprocal) ANS modes. Analogous to the color cell firing patterns of base-rate firing of each cell while one Color rate is activated to produce the experience of that color, emotion emerges when the emotion "cells" firing at base rates simply refers to an uncoupled autonomic modal state crossed with a directional change that is reciprocal or coupled nonreciprocal. The emotions, both primary and blended, have modal autonomic signatures in each of the eight combinations of SNS and PNS increase, decrease, or stasis.

Activation levels in color vision are represented by the intensity of cell firing, while for Emotion

“cells” the analogue is in the energy expenditure to adjust the autonomic SNS and PNS computed by size of error computation, the degree of change, having no “functionally distinct underlying mechanisms” (Berntson, Cacioppo, & Quigley, 1991: 460). These are captured in **Fig. 25.3** in mild and intense variants for each of the primary emotion “cells” in agreement with the Emotion Circumplex. The secondary blends are simultaneous “firing” of an uncoupled emotion cell (a change to either SNS or PNS) blended with a reciprocal or coupled nonreciprocal emotion cell while the other remains at “base rate” or no change. The production of the various shades of blended emotion labels (categories) could be further discriminated through placement in EPA octant space across each of the combinations to provide constraints and dynamics of measuring relation between emotion concepts semantically (cf Scherer 2005: 720)(cf Morgan & Heise, 1998). One such visualization of a taxonomy of emotion blends could be the following:

Plutchik Primary - E/S Emotion Taxonomy

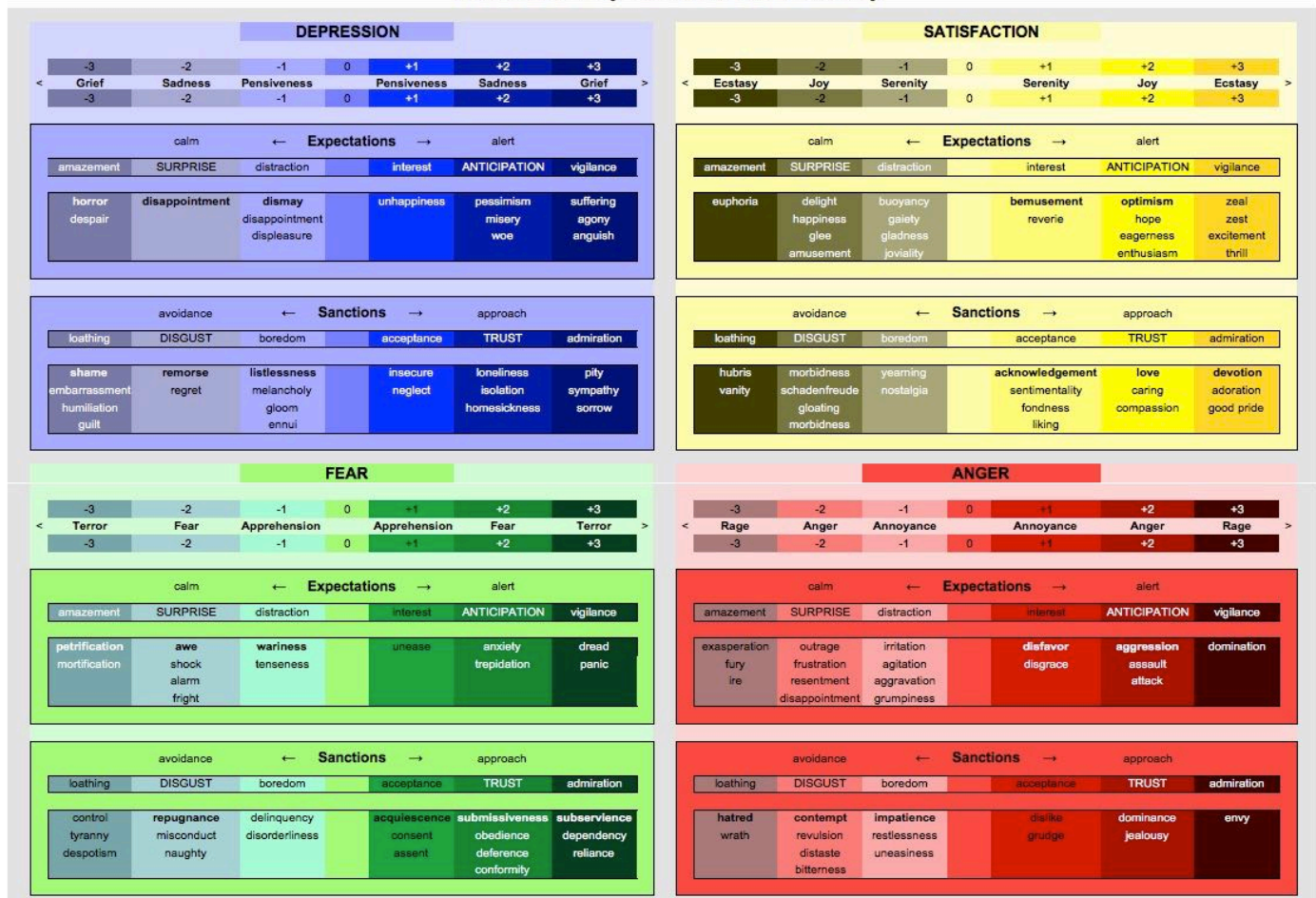


Fig. 25.4 - Primary E/S Emotion Taxonomy

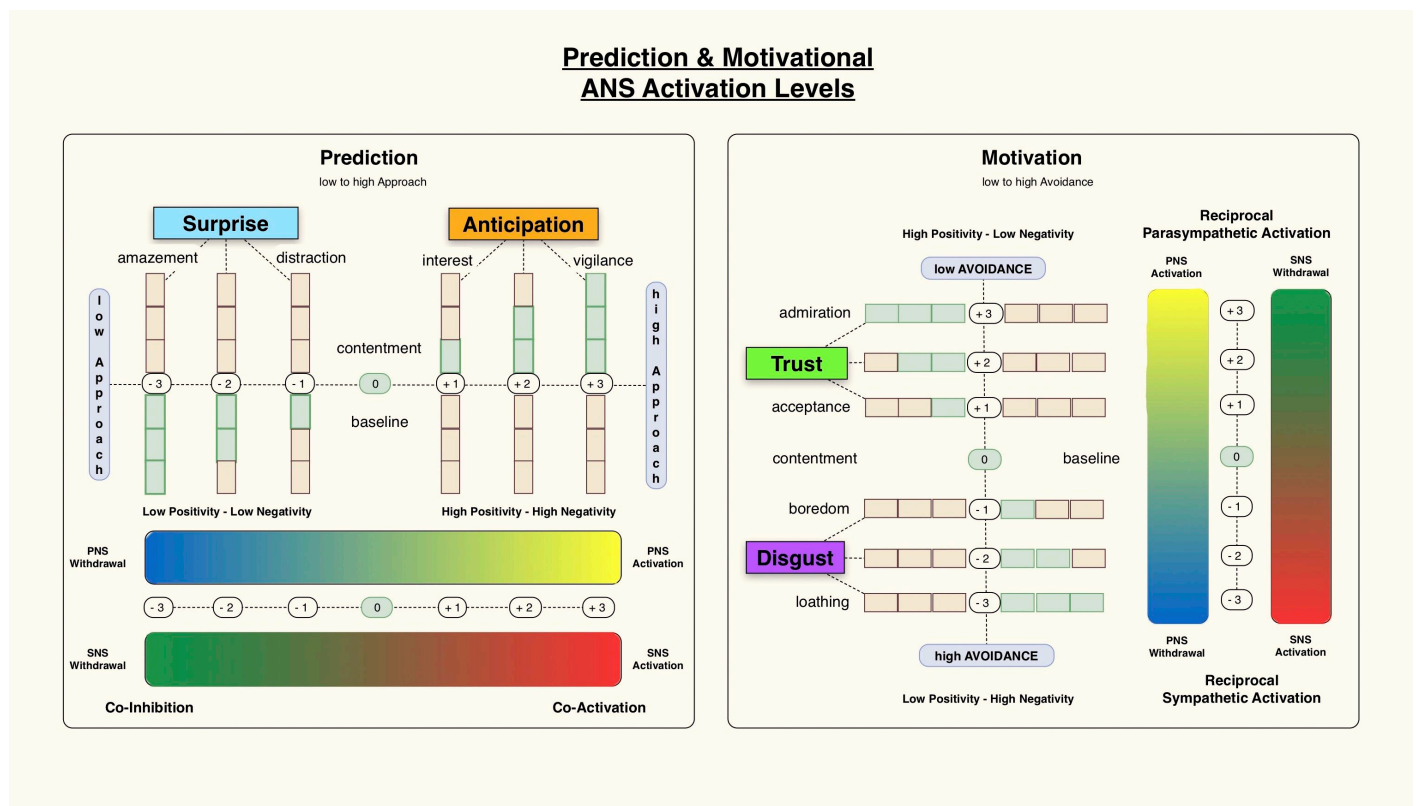


The emotion blends in **Fig. 25.4** come are categorized are recognized as blends of emotions terms semantically, but can be modeled instead as vectors in SNS and PNS functional 2-D space in varying positions along the Prediction and Motivation dimensions, translated to the E/S paradigm's Expectations and Sanctions. However, this taxonomy accounts for the variance in activation levels of semantic emotion terms, the above which are the conjectured placement of emotion terms from various emotion lists and an online thesaurus and not meant to be confirmed placements but only demonstrative of the differential shading possibilities of various uncoupled primary emotion terms across social structural E/S space. The column header emotion terms are the blends in **Fig. 25.3**, which were originally sourced from Plutchik's emotion circumplex, with the addition of a speculative set marked as "pseudo" blends of primaries offered by someone else interested in the complete blending of Plutchik's primaries (cf Hagy, 2012), only to be confirmed by Tenhouten's taxonomy (2007).

Kemper's (1978) proposed typology of general emotion categories includes a distinction between Structural, Anticipatory and Consequent categories. All three categories are related to comparisons of Power and Status levels as being adequate, excessive or insufficient, providing a range over which emotions can vary in intensity as feedback and expected patterns of ANS regulation. Thamm characterizes Structural, Anticipatory and Consequent categories as the before-change, transition, and after-change stages of social change dynamics. These vary temporally and invite comparisons to the internal triadic I-you-me structure and the Semiotic synthesized by Wiley, which might explain the moment to moment interrelation of Prediction, Autonomic activation, Conceptual meaning, and emotion regulation.

The emotion categorization and emotion blending from modes of autonomic control categorization in the Color theory of Emotion can be tied to the Power and Status Theory of Emotion through Thamm's integration of the Expectation/Sanction paradigm, both of which locate on the Social Self Model (**Fig. 24.8**). The E/S paradigm created a structural model of social action producing emotion categorization via structural components of social relationships. The Prediction and Motivation "emotion cells" which "measure" the degree of Sympathetic & Parasympathetic co-activation and reciprocity, could be integrated to the E/S paradigm to show the effect of social structure upon autonomic synchronization-divergence between social actors during social action.

Micro-adjustments to the SNS and PNS register changes in both Expectations (symmetric) and Sanctions (inverse) dimensions. The micro-adjustments would be actions of the ANS generally follow the activation or withdrawal of the components of the Polyvagal emotion subsystems. Incremental modal adjustments to the SNS and PNS branches of the ANS would arise from changing environmental/social conditions that change micro-motivations of the basic operating systems (cf Plutchik, 1997), providing a logical system to pair with the E/S Power & Status. These autonomic dynamics can be mapped to social structural relationships, which the Power and Status theory of Emotion originally posited (Kemper, 1987), which were originally tied to hormone levels of Acetylcholine, Norepinephrine, and Epinephrine. Polyvagal theory also envisions the actions of the three emotion subsystems implemented via the VVC, SNS and DVC (Porges, 2007) provides an analogue to how the SNS and PNS are adjusted based upon motivation action responses mediated by evaluations of the OFC of social stimuli.



**Fig. 25.5** - Prediction & Motivational ANS Activation Levels

The Mode of Autonomic control emotion cells would have the Anticipation-Surprise emotion “cells” firing at some rate that reflects the current status of Sympathetic and Parasympathetic coupled synchrony, while the Disgust-Trust emotion “cells” firing at some rate reflecting the current



reciprocal status of the SNS and PNS. At all times both “measures” of Prediction and Motivation can be located upon the 2-D autonomic functional plane. Hypothetically, the micro-adjustments made to either the SNS or PNS occur via highly parallel neuroendocrine (slow) and vagal (fast) afferents, but theoretically modeled as either (+) or (-) adjustments based upon the computed prediction error(s), corresponding to many separate uncoupled SNS or PNS increases or decreases, with larger or smaller errors representing activation amplitudes.

Thus, at the lowest level, stimulus bound incremental adjustments according to the logic of **Fig. 25.5** seen from the level of Polyvagal’s emotion subsystem dynamics would equate VVC activation (PNS activation) with , DVC withdrawal (self not ready & other near), and SNS activation (self ready & other not near). Each evaluative moment, related to the anterior Insular computation of the emotional moment (Craig, 2006) could theoretically produce the repetitive cycle that the emotional autonomic system adjusts its readiness for the next moment. These adjust the level of Anticipation and Motivation to act in the physical environment, which is used by the semantic meaning system to evaluate the meaning of the social situation to allow for top-down control based upon the changing meaning of the situation. The expected adjustments of the ANS emotion subsystems based upon Expectations of Self and Other could be:

Self Expectation Meet :: VVC ↑  
 Self Expectation Miss :: SNS ↑  
 Self Sanction Reward :: VVC ↑  
 Self Sanction Punish :: DVC ↓  
 Other Expectation Meet :: VVC ↑  
 Other Expectation Miss :: DVC ↓  
 Other Sanction Reward :: SNS ↓  
 Other Sanction Punish :: SNS ↑

Sustained “movements” in a particular direction in polyvagal response may be the source of emotions which influence emotional evaluation that resemble the Behavioral Intergroup and Affect Stereotype (BIAS) emotion (Fiske *et al.*, 2007), may be interpreted as affective displays of Envy, Pity, Contempt, and Admiration. Fessler (1999) produces using a similar matrix, where positive and negative Sociability are seen in Proximity terms representing the attitude towards other, while the Self-

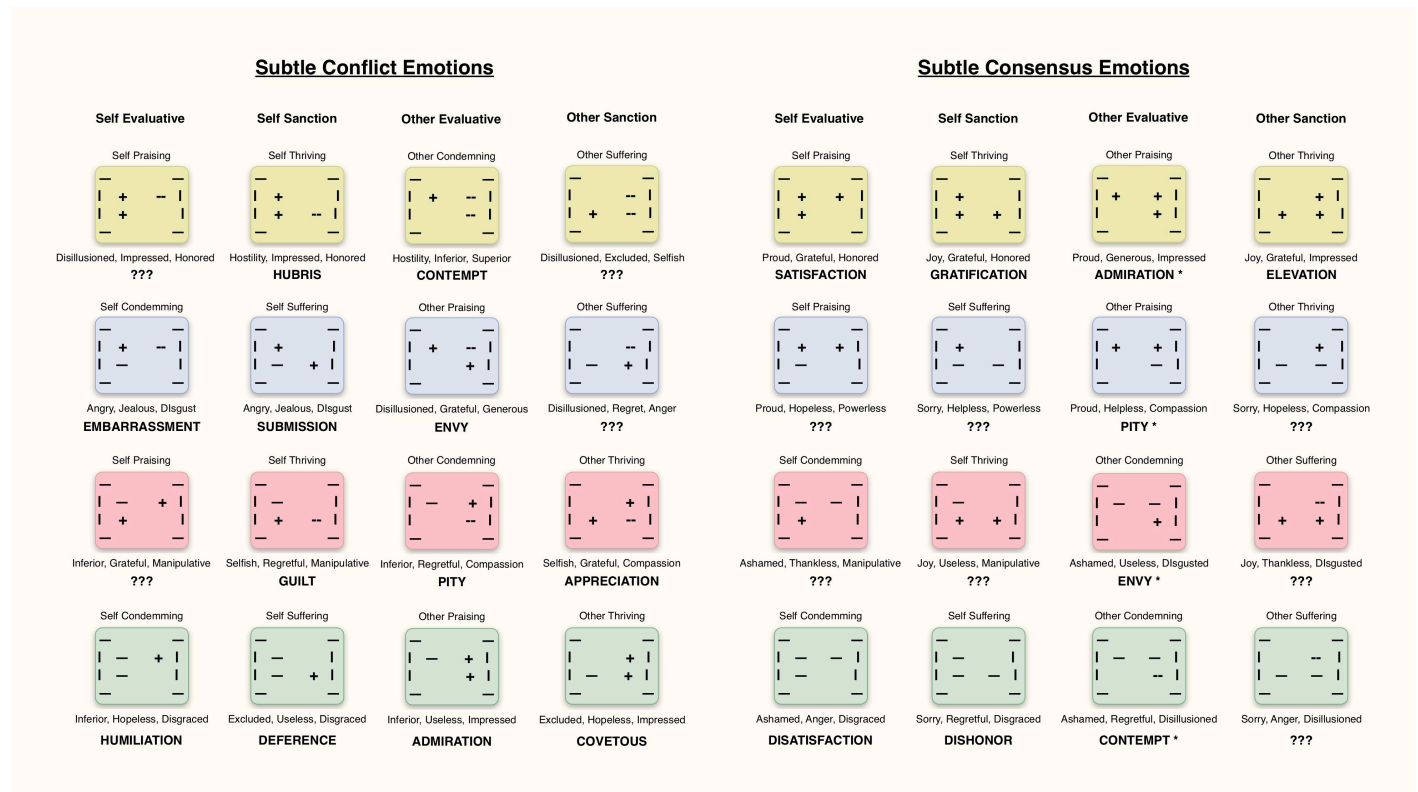
Construal dimension represents the comparison dimension between the Self and Alter.

However, Tenhouten's emotion taxonomy lacks the ability to explain how and under what social structural conditions these emotion blends occur (Thamm, 2006)...enter Power Status Theory of Emotion (PSToE). Recall that **Fig. 8.5** shows the structural emotional components of a Power Advantaged comparison, one of the 16 combinations of Power & Status dyadic comparison. Thamm's notation system can be further systematized by seeing the relationship between Self & Other incorporated into his E-S paradigm. The four matrix positions in the notation represent a row of Expectations (top) & Sanctions (bottom) and columns of Self (left) and Other. These actually can be seen as related to the Social Self Model, where Expectations = high Group, Sanctions = low Group, Self = low Autonomy and Other = high Autonomy. Thus, not only can the interiors of each PSToE notation be oriented to the model, but the 16 Power & Status combinations can be oriented into the Social Self Model.

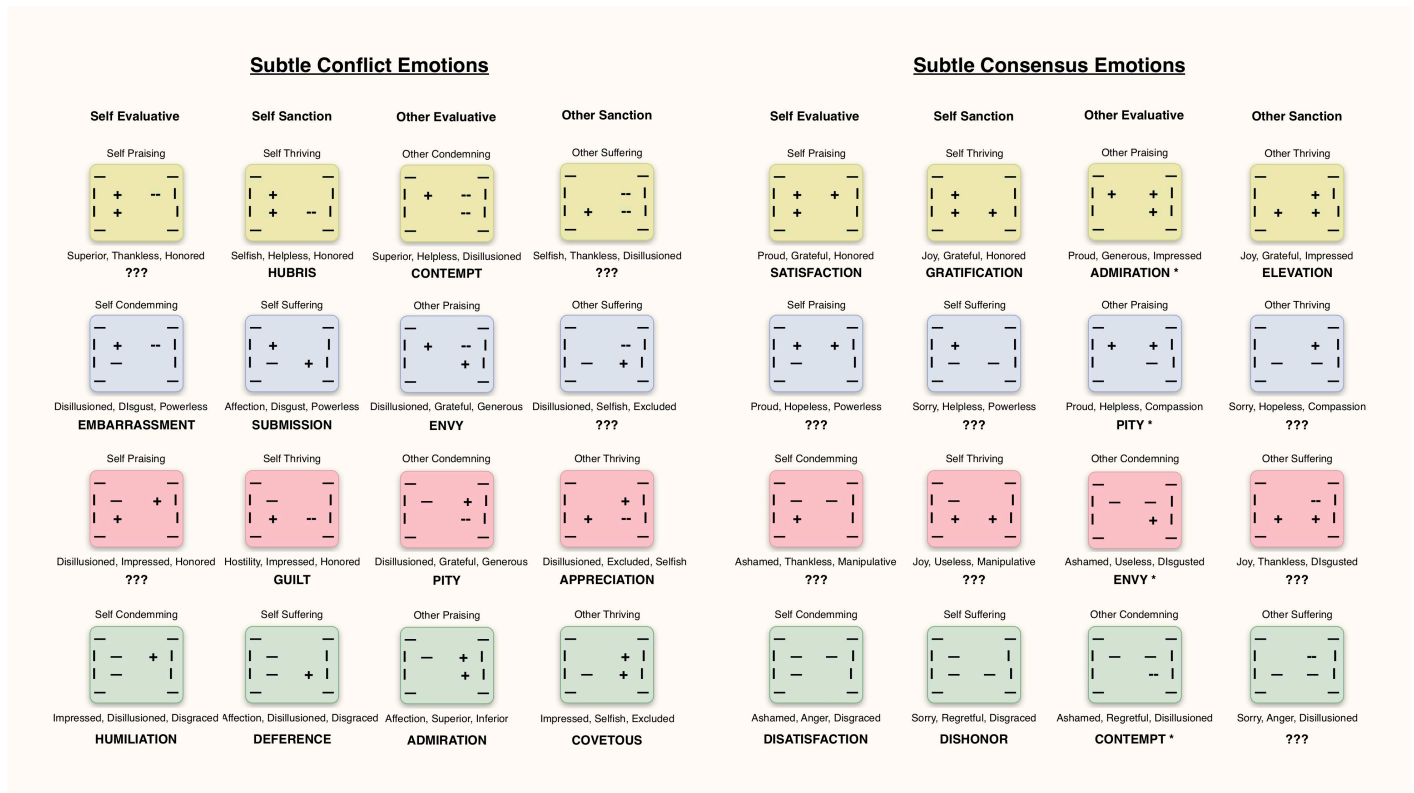
The set of subtle emotions for a Power Advantage relation outlined by Thamm were shown in the bottom right panel of **Fig. 8.5**. Three relational comparisons comprise the Balance Theory mode match the comparative emotional components of the E-S diagram: Distribution comparisons (horizontal between Ego and Alter), Interaction comparisons (diagonally between Ego and Alter), and Attribution comparisons (vertical), which can be remembered D-I-A and form appraisals of the social actions. These are labeled as sides of the triadic forms from balance theory, which model three social relations which can each provide an emotional appraisal if attended to (Distribution:  $P(+/-) > O$ , Interaction:  $O(+/-) > X$ , Attribution:  $P(+/-) > X$ ). Additionally, there are four perspectives of DIA interactions each with a balance graphs, representing each of the four subtle (3-component) emotions, whose decoding Thamm (2007) stated was beyond the scope of his paper. The four triads per PSToE diagram show subtle emotions composed of three 2-component emotions, each a side of the balance graph. Additionally, two pairs of subtle emotions inform about the model of Ego, while the other two inform about the model of Alter, although both are from the point of view of Ego. The point of view of Alter are the mirror opposite diagram model connected either vertically (left) or horizontally (right).

There are theoretically two different structures offered as explanations of Subtle emotion structure following the dimensional logic of Thamm's or prototype logic of Fessler's classification schemes.

Thus, a detailed review of emotion terms generated by D-I-A triadic relations could theoretically show how emotions like Humiliation, Embarrassment, Hubris, Remorse are generated from social interaction for Thamm logic. Or in the case of Fessler, the liking/dislike plus a comparison structure could be produce the subtle structure. Affect Control Theory's INTERACT software should be able to model and verify which structure is correct. The two Subtle emotion taxonomy structures are below in **Fig. 25.6a** & **Fig. 25.6b**:



**Fig. 25.6a** - Moral Conflict & Consensus Subtle Structural Emotions -  
Sources: Thamm (2000, 2004); Haidt (2003)



**Fig. 25.6b** - Moral Conflict & Consensus Subtle Structural Emotions -

*Sources:* Fessler (1999); Haidt (2003)

A few notes are in order to explain the labeling of the different subtle emotion categories in **Fig. 25.6a** & **Fig. 25.6b**. First of all, the full E/S structure between the dyad produces a Syndrome, which is composed of four subtle emotion forms shown above in the two above figures for both Conflict and Consensus power status forms. The four subtle forms represent Self evaluation (expectations between self & other), Self sanction (sanction row for self & other), Other evaluation and Other Sanction. This study presents a hypothesis that moral emotions emerge from subtle forms of Conflict and Consensus subtle emotions, which are either Self or Other focused. Aligning with the OCC Appraisal theory (Ortony, Clore, Collins, 1988), Haidt (2003) proposed different families of emotions exist which correspond to different observational perspectives on social action, whether they be oriented towards observing Self or Other, and whether they be praising or

Haidt (2003) identifies a general Self-conscious category of moral emotions, as well as other focused general moral emotion categories of Condemning, Praising and Suffering that have a triplet of prototype emotions. To the three other-focused category, this study add a fourth, Thriving, which then matches the four to meeting or not meeting expectations (Praising or Condemning) and to

receiving reward or punishment sanctions (Thriving or Suffering), each of which can apply to either Self or Other since the subtle forms can be applied reflexively (Thamm, 2004).

Haidt (2003) identifies triplets of prototypical moral emotions which fit for each general moral emotion category, which are theorized to correspond with Shweder's (1997) Big "Three" Ethics of Community, Autonomy, and Divinity. The CAD Hypothesis (Rozin *et al.*, 1999) presented early posited that Contempt, Anger, and Disgust were other-condemning moral emotions that correspond to the logics of Community, Autonomy, and Divinity, respectively. A self-conscious general moral emotion category is identified with Shame, Embarrassment, and Guilt as the triplet. Also identified are the other-suffering triplet Sympathy, Empathy, and Compassion (although they aren't not differentiated) and other-praising triplet of Elevation, Gratitude, and Admiration (Algoe & Haidt, 2008). A couple of others are included that don't quite fit a category, as in Schadenfreude (joy at another's misfortune), Agape love (selfless), and Sama (stillness/calmness). Not all share the same CAD structure explicitly, but Haidt's account also explains an Action tendency for each moral emotion, which is an important dimension to describe since according to PSToE, the structural emotion categories are produced from different aspects of the structural relationship which actions (or mere contemplation of actions) general categories of.

While Haidt (2003) does reference Fessler's (1999) account of the Bengkulu proto-shame and proto-pride emotions in the account of Self-Conscious emotions, the account does not quite spell out the logic of them as second-order emotions from the reception of the first order other-condemning/praising emotions. Also, the structure of Community, Autonomy, Divinity is not necessarily referenced for each category. However, this study posits the PSToE's subtle emotion structures could bring order to these categories and show how they are related to aspects of social structure.

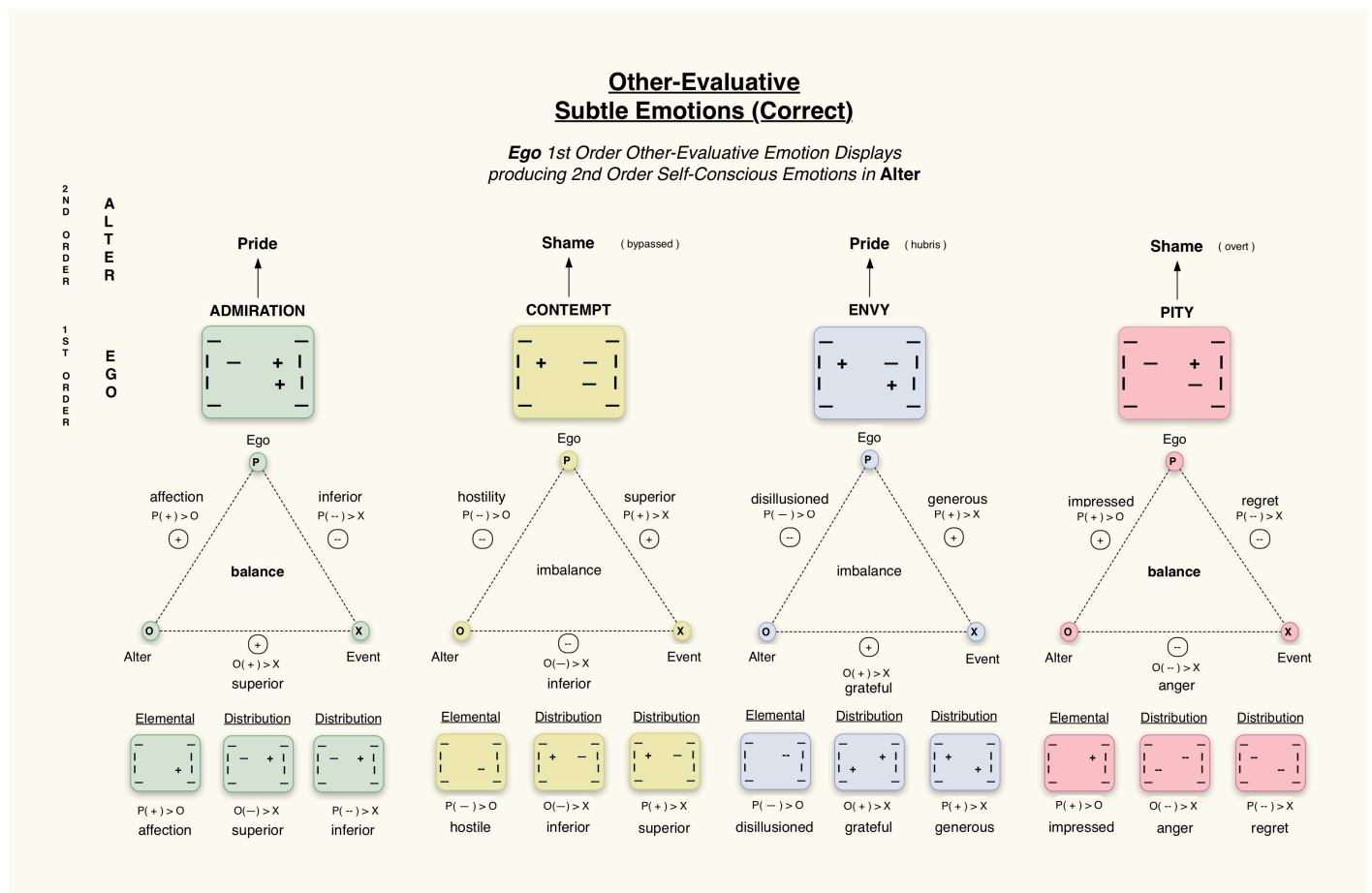
However, as mentioned above, Fessler (1999) offers an account of other evaluative emotions which produce second order emotions that involves different social structural features than Thamm (2004), who posits subtle forms are composed of three comparison 2-category emotion blends of an Distribution comparison, an Interaction comparison, and an Attribution comparison. The emotion labels of the DIA emotion categories are listed in the small type emotion labels under each subtle

form in **Fig. 25.6a**. However, Fessler (1999) proposed a six step logic which generated other-evaluative emotions which were composed of two components, one elementary emotion of like or dislike and one 2-category comparison emotion category, producing different emotion labels which include an elementary like/dislike, with one important twist. The Other-evaluative subtle forms (right two) will have both an expectation and sanction dimension for other, allowing for a comparison of either expectations or sanctions. However, a Self-evaluative subtle emotion form (left two), have only one emotion category representing either approval/disapproval (expectations) or like/dislike (sanctions), while the comparison is for the self's own attribution. Thus, **Fig. 25.6b** shows emotion category labels that correspond to a general elemental emotion and the comparison emotion of either an attribution (of self) or distribution (of other) for both Other and Self. Thus, the labels in the second figure are Elemental (Like/dislike) - Other Comparison - Self Comparison.

The other-evaluative subtle emotion form (third column) shows the familiar BIAS emotions of Admiration, Contempt, Pity, and Envy, with corresponding comparison emotional components (the triad of emotions below each Subtle form) that explain the overall Subtle emotion category. For the Status Advantage/Disadvantage pairings, the other evaluative emotions of Admiration and Contempt match the expected attributional E/S forms that agree with the BIAS positions in the Social Self Model. Thus, recall those whom are judged to be Admirable are those whom meet Expectations and receive rewards, with an attributional structure (vertical) of ( + + ), while those judged with Contempt neither meet Expectations nor receive rewards, with a structure of ( - - ). However, for the Power Advantage/Disadvantage pairings, the 2-category triad of emotions don't seem to make up the correct constituent emotions that make up Pity and Envy. Precisely, the distributional comparison of expectations that lead to feelings of Inferior and Superior seem to be reversed for these two cases, conflicting with Fessler's (1999) account of the emotion building blocks that blend to product Pity and Envy.

As mentioned earlier, an explanation for this might be that the two Power and Status contexts trigger different conceptions for inferiority and superiority. Power dynamics focus on differentials of power, where power conflicts occur with complementary Power forms (powerful - powerless), while symmetrical power dynamics are Consensus forms. The context of power may actually make the attributional relationship comparing levels of Power salient, altering the inferiority or superiority. The expectation differential in conflicts are assured by the complementary power forms, where a

difference in distribution is guaranteed. In the context of Power, a guaranteed outcome where Power acquires rewards without meeting expectations is structural rather than being a result of interaction or consequent (Kemper, 1978). Therefore, the other-evaluative Subtle form for Power conflicts involve an emotion dynamic which produces pseudo forms of Pride and Envy from the Other's Expectation structure and the Contribution interaction in which Alter's emotion reaction is lacking, explained below. This would bring the Other-evaluative first order emotions into agreement with both second order Self-conscious emotions (Fessler, 1999) and the BIAS emotions of the SCM (Cuddy et al., 2008).



**Fig. 25.7** - Self-Conscious Subtle Emotion Categories - Sources: Thamm (1992, 2004, 2007)

Fessler's (1999) characterization of the logic of Envy is produced in Ego when Alter is superior to Ego, Alter has something Ego desires, and Ego has hostility towards Alter. Similarly the logic of Pity is produced when Alter is inferior to Ego, Ego has something Alter does not, and Ego has affection for Alter. In **Fig. 16.3** earlier, when mapped to Thamm's E/S paradigm, the logics for these two emotions are reversed. This study suggests a second form of Pity and Envy exist comprised by

different emotion structures in Power conflict contexts, where superiority is defined as using power to get rewards, while meeting expectations and not getting rewards is an inferior position. Instead in **Fig 25.7**, second order Hubris and Overt/Undifferentiated Shame are generated by like/dislike elemental structure dependent upon the expectations of other, plus Ego's own contribution and interaction structure, comparatively seen from both Ego and Alter's point of view. In Power conflict, these dimensions are consistent (same valence), meaning, which for Status conflict the valences differ and lead to inconsistent interactions (Thamm, 2004).

In the Envy case, the elemental judgment of Alter in terms of affection or hostility is instead defined by their meeting or not meeting expectations and the Interactional contribution of Ego is compared. Thus, when Alter does not meet expectations but gets rewards (Power-superior), the contribution emotion is generosity, which expects a gratitude in return from Alter. However, without that gratitude, it makes Ego's contribution thankless and creates a type of hostility that creates Envy. From Alter's point of view and superior power differential, receiving rewards is a sign of "respect" or Admiration, yet the underlying emotion in Alter's negative Self-attribution of manipulative accompanied by Ego's negative assessment, sours the Admiration making any show of Pride a false one, instead approaching Hubris.

In the case of Pity, when Alter meets expectations (Ego impressed with Alter) but doesn't get rewards (Powerless-inferior), then Ego's contribution emotion is Regret, which expects Anger in return from Alter. From Ego's point of view, the emotion structure of powerless elicits Compassion. However, the inferior, low Power position of Alter is Submissive, which would not register as Anger. From Alter's point of view, not receiving rewards is expected with Ego's positive Impression and Compassion warm emotions, approximating Ego's blended emotion like Pity.

These points are very speculative, but the contextual reversal of inferiority and superiority in Power relations must alter the structural emotion dynamics, and for the other-evaluative emotions to agree with Fessler's second order logic and the SCM's placement of BIAS emotions requires using different comparison structures, in these cases interactional. There may be in fact, two forms of Envy and Pity, one in the context of Power dynamics that focuses on interactional dimensions, and one in terms of expectations when the use of Power is alter, and meeting expectations changes the definition of Inferior and Superior, which causes the definition of Pity and Envy to reverse. It may also be the



case Thamm's notation must be altered to agree with Fessler's & Cuddy *et al*'s accounts.

Importantly, Fessler's (1999) account of the rules in Bengkulu culture regulating Shame-like and Pride-like emotions reveal the evolutionary logic which lead to the emergence of second order emotions of emotions. They inform the observer about Other's view of the observer, which provided symbolic reference, the first steps toward self-awareness. Shame and Pride are particularly important second order emotions, for they are universal second order emotions which guide social behavior via the internalization of social norms, causing prosocial behavior either through adherence to social norms (conformity) or high valence prosocial emotions from making others feel good, integral in Social Structure (Scheff, 1994).

Shame and Pride's construction using the nomenclature of the PSToE involve the 3-category Subtle emotions. Other-evaluative emotions (Contempt, Pity, Envy and Admiration) are the third column of subtle emotions, as in **Fig. 25.7**. These are outward displays representing moral judgments of others, arising implicitly from particular structures of Power and Status relation. Each of these other-evaluative emotions are found in the Conflict Interactions between Power and Status. They can also appear as subtle emotion combination in the Mixed forms which Thamm ignores because of their unlikely interactions. The detailed structure of these other-focused subtle emotions are worth taking a deeper look.

Rules for constructing the second order emotions are as follows:

Univalent (Bypassed) Pride: arises from being the object of Admiration

Univalent (Bypassed) Shame: arises from being the object of Contempt

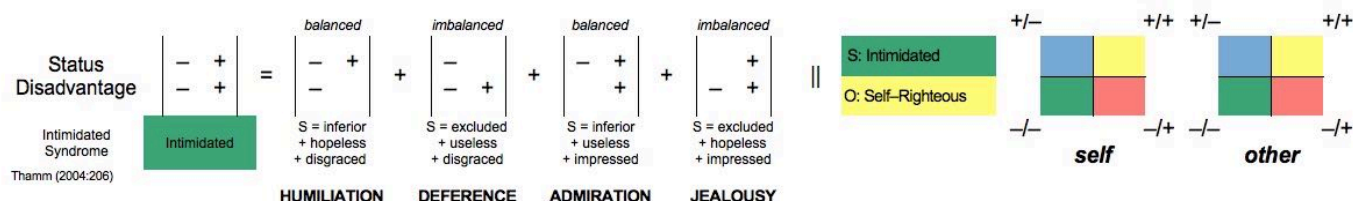
Ambivalent (Overt) Pride: arises from being the object of Envy

Ambivalent (Overt) Shame: arises from being the object of Pity

The difficulty in their decoding is a cultural norm or feeling rule, which other cultures do not necessarily have, evidenced by Fessler's study of the Bengkulu culture and their social awareness of Shame-like and Pride-like emotions. Culture differ in their awareness and valuation of emotions, resulting in different valued identities and behaviors, which in part explains the misunderstanding that can occur when trying to understand foreign practices that are different than what in our own culture is conventional. The cultural diversity results from the history of people over a long time

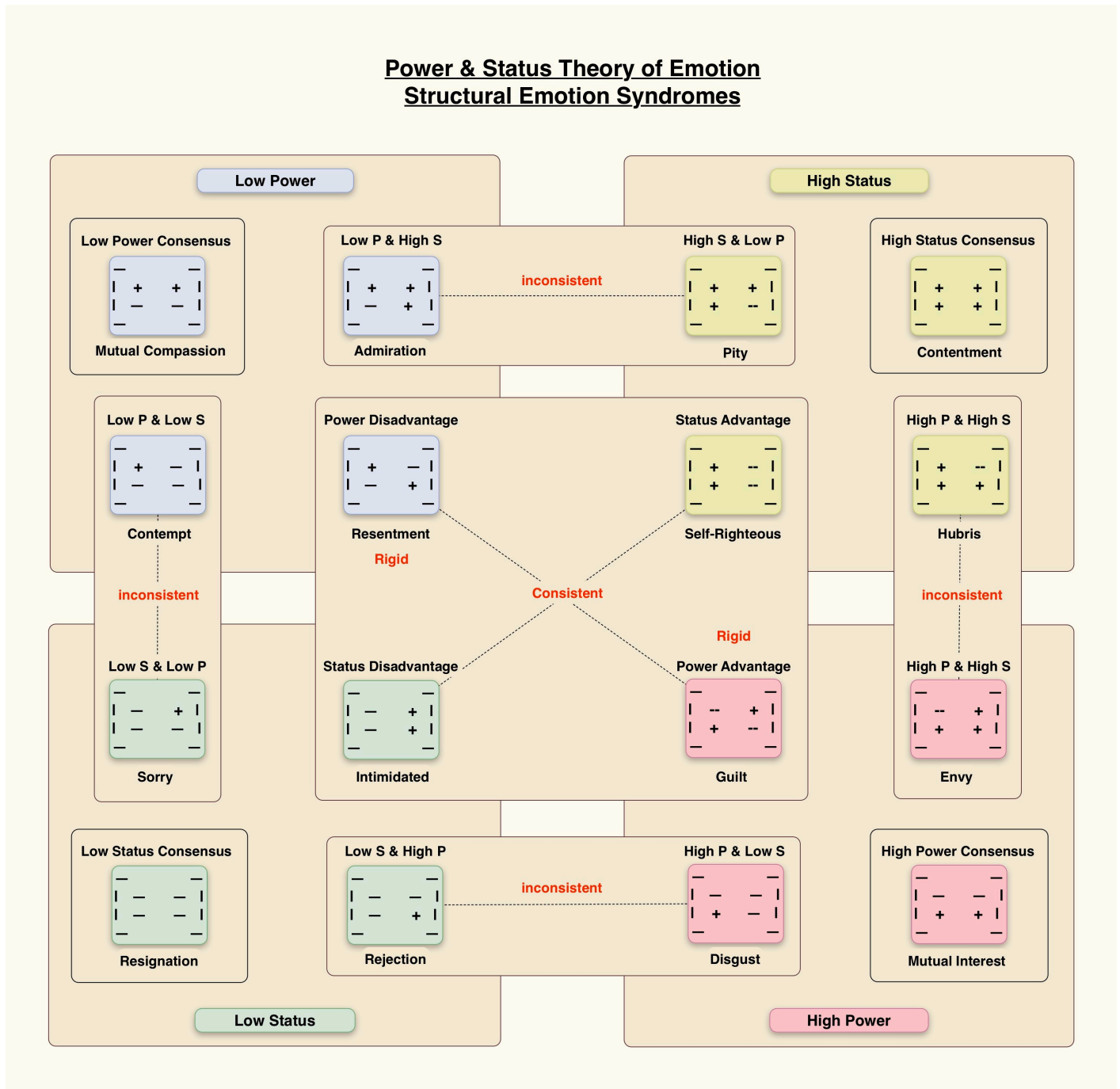
fitting into a niche that's influenced by the innate psychological responses evoked by environmental cues, by interactions with other cultures, by the sheer happenstance of historical chance, by the ingenuity of people making unique contributions to the culture. No culture can claim superiority nor can they be deemed inferior, for all are unique across an unfathomable large number of factors. What they do share in common is in the pancultural universals which the IToCE is trying to piece together to show the underlying system of systems influencing cultural change.

What is more, the hypothetical analytics above in the Emotion Blending (**Fig. 25.1**) and Emotion Taxonomy (**Fig. 25.1**), Moral Emotions structures (**Fig. 25.3**), and Self-Conscious emotions (**Fig. 25.3**) allow for a tentative mapping of emotion structure to autonomic micro-adjustments, which could yield an index of Emotion Syndromes, for which each structural elemental, comparison, and subtle form's possible appraisal would correspond to adjustments in Prediction x Motivational space.



**Fig. 25.78** - Status Disadvantage Syndrome integrating Structure, Appraisal & ANS adjustment

The Emotion Syndrome structures, the 16 different 4-category Power & Status combinations (of which 8 are simply mirror images of the other 8), when displayed together creates an interesting pattern which helps to visualize the systematic dynamics of social interaction guided by Status and Power, producing structural emotion categories. The PSToE diagrams sort systematically into the neatly ordered and symmetrical pattern in **Fig. 25.9** below. It should be noted that the four quadrants in **Fig. 25.9** are not directly mapped to cultural level worldviews, as worldviews do not participate in Power and Status interaction, individuals do. Individuals use various combinations of Power and Status throughout interaction with many different people and in many different settings. While it may be claimed that people tend to habitually exhibit particular tendencies is fair, but interactions with other individuals sharing or having different worldviews can include many of the interactional patterns of power and status use.



**Fig. 25.9** - PSToE Structural Emotion Syndromes - *Sources: Thamm (2004, 2007)*

The patterns of Power and Status dyadic structures in **Fig. 25.9** represent the sixteen different configurations, half of which are mirror images. This symmetrical alignment shows the conflict structures in the center, which are consistent in their interactional diagonals, which is true also of the corner structures, showing both Self and Other mirroring each other. The other structures in **Fig. 25.9** represent inconsistent relations, as the interactional diagonals are mismatched, which reflects low probabilities of interaction (Thamm, 2004). Therefore, Power conflicts reflect tendency for

interaction, while Status conflicts reflect no interaction between high status and low status.

The incompatibility of inconsistent interactions in which one interactant is labeled as being a power combination versus one in a status alignment, which this study labels as ambivalent interactions. Thamm left these diagrams undocumented and stated in most cases they rarely led to interaction because of inconsistency in agreement about norms, represented by the diagonal interactional relations within each square. Their different sets of emotion structures do not match the expected categories. This may reflect incompatibility between Power and Status frames, analogous to Relational Model Theory's incompatibility between Relational Models, although each RM expresses all of these Structural relations, although perhaps favors some structures over others.

However, evidence from the structure of communication gives some evidence of the dynamics involved in Power-Status structures in **Fig. 25.9**. The diagonals represent consistent, stable power status conflict structures, while the corners represent consistent stable cooperative consensus structures. The edges represent inconsistent, social structures which lead to misunderstanding.

The study of the pragmatics of communication has found two types of interactional patterns, termed complementary and symmetrical interactional styles, which are types of "behavioral gestalts" between the dyad that produce stable forms (Watzlawick *et al.*, 1967: 67-71). The complementary interactional style produces a balance between assertive and submissive behaviors which complement each other based on the *maximization* of difference of behavior. The complementary style has two positions which interlock either as a "one-up" or "one-down" position, not good or bad, but in relationship which evoke behaviors which complement one another (as in parent-child dyad). The symmetrical interactional form produces a competitive boasting behavioral pattern arising from symmetrical interaction based on the *minimization* of difference of behavior. Both communication modes have both stable forms, as well as a "potentially pathological forms (escalation in symmetry and rigidity in complementary)" (Watzlawick *et al.*, 1967: 69).

These two styles in communication have behavioral analogues which manifest in **Fig. 25.9**. About the inconsistent interactional emotion substructures, which are found in comparisons between high and low Status, Thamm states that "actors tend to avoid interaction with incongruent others" and that "some status differences in the structure of social action tend to produce emotions that are

distancing and alienating" (2006: 205). Here Thamm is referring to the diagonal relationships within a single notation, which for Power relationships, interactions are congruent (signs match) while for Status relationships, signs are mismatched. However, the larger pattern of the mismatches connecting mirror image relationships between adjacent quadrants, there is another order of mismatch in that the interactional diagonals are neither both congruent or incongruent but completely mismatched.

The key to understanding the miscommunication occurring between people interacting with mixed Power and Status comparisons (the four outer patterns connecting adjacent quadrants) rests in the expectation and sanction pairings that are mismatched in these pairings. This produces expectations for predictable emotion patterns that are not met because one side is expecting a Power dyadic form which can be said to usually be complementary, while the other expects a symmetrical Status form. Their mix produces emotion categories from emotion substructures that don't fit the logic for the other form, seem to result in evoked feelings which aren't appropriately matched to their expected form.

The distributional, attributional and interactional structures that make up the Subtle ambivalent forms create mismatches in the expectations and sanctions. The incompatibility between the two produce structural emotion categories which don't make sense for the relational logic whether complementary or symmetrical. The familiar patterns we see between individuals and groups of compatible and stable Power and Status diagrams produce stable sets of interactional patterns and stable structural emotions. Similarly, the unpaired corner diagrams have stable structure leading to stable interactional patterns and stable structural emotions.

The relationship between the diagonal opposite relational styles show a consistent structure & common interactional patterns of complementary Power or Status interactions. Consistent pairings reflect the agreement on norms for behavior, yielding consistent interactions, while inconsistency reveals discord of norms. This inconsistency occurs because of a mismatch in pairing one actor in a Power attributional state paired with the other in a Status attributional state. While these interaction tendency groupings resemble the quadrants of Social Self Model, they can occur within any or across quadrants, as they simply reflect interaction between two people having certain levels of power and status, although the dynamics scale to groups. However, the accumulation of microinteraction of

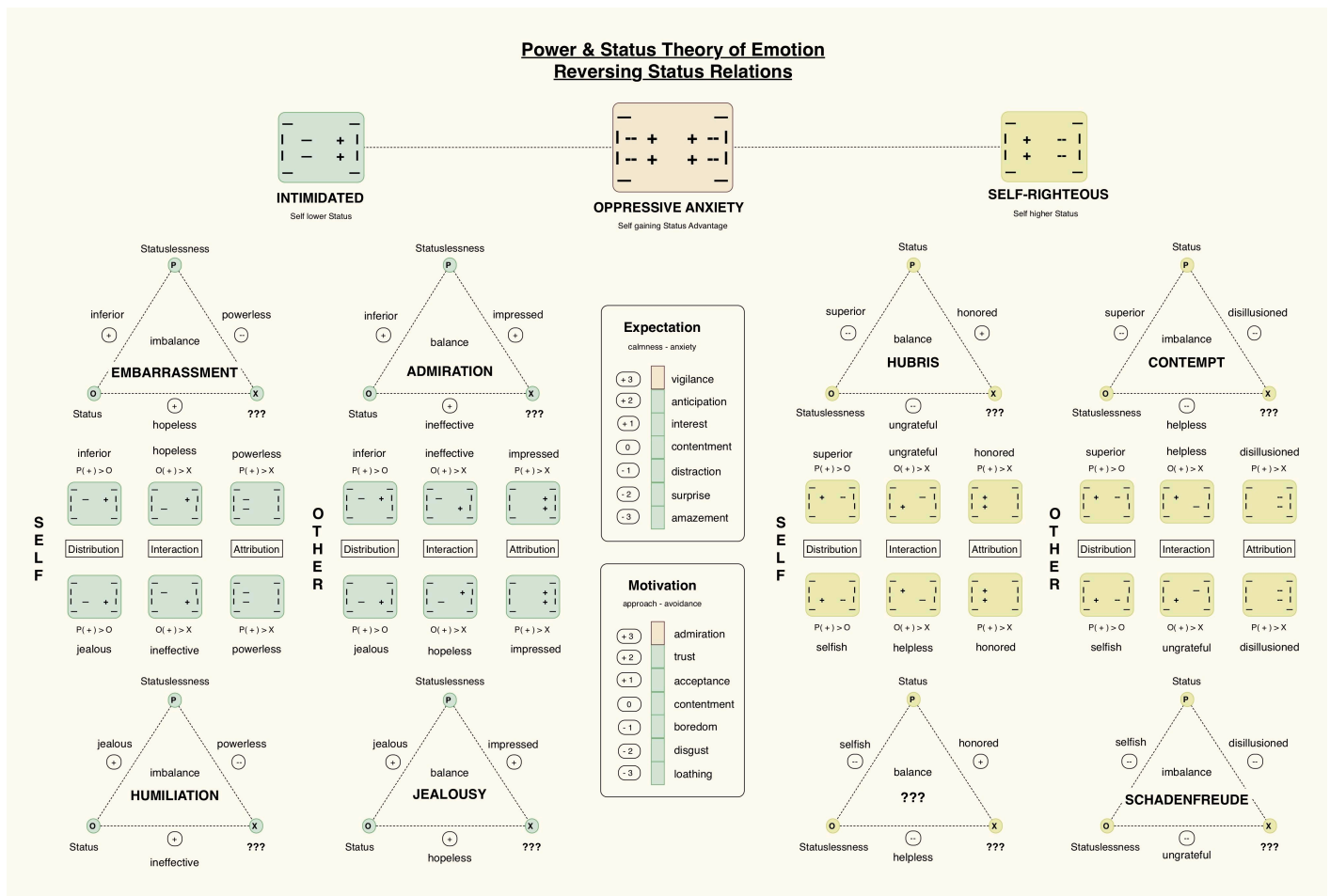
similar behavior across a great many individuals creates social structure, and these interaction tendencies create social structure. Thus, the consistent interactions create social structural patterns which at the cultural level influence what norms are valued and internalized while the behaviors are copied and externalized.

*“Oppressive anxiety may include activities ranging from Self shaming, belittling, demoting, demeaning, depreciating, or rejecting Other, to an outright use of humiliation. All of these tactics are designed to confirm Self’s emerging victorious superiority in the relation. Although there may be a degrading sympathy for Other, it is secondary to Self’s motive to gain honor, prestige or esteem, and to dominate the status relationship.” Thamm (2004: 217)*

The PSToE also models the emotion effects in a process dimension of Power and Status. Emotions which occurs in the process of change from one losing power or status or gaining power and status, must differ from the structural emotions from having those traits. Structural traits of Power and Status are largely static and unchanging. Thamm theorizes that social processes goes “from an old stability, to instability, and then to a new stability; from certainty, to uncertainty, to certainty again” (Thamm, 2004: 207). This produces anticipatory anxiety that varies from positive hopes to negative fears. During the transitional stage, when the outcome is unclear, the prospect of losing power or status drives anxiety in all interactants. This changes the makeup of emotion blends of interactional relations, which are carry an anxiety transition from one distribution to another.

The comparison emotion relations as well as subtle emotions built from 2-component comparison emotions change yielding different sets of emotions after a reversal. A single PSToE diagram alone shows a structural comparison, but a transition diagram shows a combined before change and after change notation with associated anxiety. Power anxieties can characterized as Offensive or Defensive in the case of power struggles, while Status anxieties would be Oppressive or Depressive. Associated with changes to power attributions are feelings of injustice, which represent judgments of fairness. Appraisals of deserving or undeserving also accompany these changes. “Change of power and status relations result in both actors changing their appraisals of who is undeserving of the punishments and deserving of rewards.” (Thamm, 2004: 210).

\*\*\* Fix image Status Reversals using old DIA balance diagrams



**Fig. 25.10** - PSToE Reversing Status Relations - *Source: Thamm (2004, 2007)*

**Fig. 25.10** shows a Status Reversal notation, from a disadvantaged to advantaged Status position. The structural comparison and subtle emotions essentially flip to their opposite pairs in the before-and after-change structures. The important part of reversals and social change is that anxieties emerge during transition which result in instability and gradual shifting of devious action by the actor trying to acquire Power (in the case of power), or in the case of Status, the change in deference to status results in demeaning and deferring, with the demeaning substructure of emotion during these changes resulting in displays of disrespect and dishonor. These status substructures involve the losing or gaining of respect for the other, which produces either oppressive or depressive anxiety. These processes result in the changing of the meaning of injustice for whomever emerges with the advantage (Thamm, 2004).

The expectation and motivation scales in the center of **Fig. 25.10** represent different levels of

Expectation of outcome and Motivation level after the change. These scales have been added by the IToCE emotion theory to augment Thamm's conception of two dimensions of expectancy and sanction. The degree to which the levels of either change increases the intensity of anxiety during the transition and especially the emotions produced by the outcomes. Failure to anticipate the changes of a negative outcome increases the negative intensity of the resultant emotions, corresponding to autonomic co-inhibition, while anticipation of the outcome results in autonomic co-activation accompanied more positive feelings. Similarly, the intensity of emotions can produce different levels of motivation to sanction with punishment or reward, increasing or decreasing the degree of avoidance or approach to the other. These two measures, Expectation and Sanction, correspond to Core Affect's activation and valence, affecting the nuance of corresponding 2-category and 3-category emotions.

The Power & Status comparison diagrams (16 total) are each composed of at least 15 possible emotions, representing various combinations: eight Primary, eight Distributional, eight Attributional, eight Interactional, 32 Subtle and 16 emotion syndromes. These represent emotion categories that could be felt through appraisal during interaction, although most go without appraisal unless salient to the situation. Thamm's model posits these emotions categories are available for appraisal by the conscious expansion and attention to the many different relational perspectives in social interaction. Thamm's model could be extended to understand the emotion dynamics at the macro level of groups, perhaps discovering other sets of relations between groups that do not appear in individuals.

\*\*\* Add Macro- & group PSToE dynamics...intergroup behaviors (Taifel)/anticipatory emotions

Affect Control Theory may very well be able to confirm the PSToE emotion model. ACT provides a mathematical model for simulating emotion generation and could model the PSToE Expectation and Sanction (E-S) paradigm and transitional emotion dynamics. ACT simulates the expectations and sanctions people make when enacting role relationships, modeling how people behave as individuals shaped by language, experience and impressions (Wiggins & Heise, 1988). "As individuals seek experiences confirming their sentiments, they construct behavioral expectations for role identities, label or attribute character traits to people in order to comprehend deviance, and experience emotions that reflect successes and failures of the confirmation process." (Lively & Heise, 2014:



1110). The meeting of expectations of social actors produces positive emotions, while expectations not met produces negative emotion and sanctioning behavior. Sanctions also produce similar emotion categories as the Thamm's theory of Emotion posits.

If the state of the ANS emotion subsystems are recognizable and encoded into the affective meaning of language symbolically representing concepts in affective space, it should be possible to understand how emotions are expressed in the body. Affect Control Theory's mathematized model to produce a predictive theory of action, identity and emotion (Heise, 2001) provides the tools to test this. It should be theoretically possible to build Thamm's proposed "Periodic Table of Emotion" from the combination of these two models.

Wiggins and Heise make the point that "extending role explanations to individual conduct, and to support its claim as a general theory of action...(requires) show(ing) that ACT does model how people behave as individuals" (1988: 154). This makes sense, since criticism of Symbolic Interactionism and ACT is that role-identities are simply patterns of behavior, not causative of behavior (Wiggins & Heise, 1988). However, empirical testing of actual subjects' answers to properly formed studies of Expectation and Sanctioning and the subsequent production of emotions match closely the ACT simulated model of social behavior (Wiggins & Heise, 1988: 163), so integrating the PSToE into ACT could solve social emotion decoding and provide a solid base for understanding human emotion and adding to a new synthesis.

## CHAPTER TWENTY-SIX

### Moral Judgment & Emotion

*“In 1975, E.O. Wilson predicted that ethics would soon become part of the “new synthesis” of sociobiology, in which distal mechanisms (such as evolution), proximal mechanisms (such as neural processes), and the socially constructed web of meanings and institutions (as studied by the humanities and social sciences) would all be integrated into a full explanation of human morality. The key to this integration, Wilson argued, was to begin with the moral intuitions given to us by our evolved emotions.” Haidt & Kesebir (2010: 800)*

An explanation of the moral domain is confusingly difficult despite the common knowledge of what is considered morally “right or wrong” in our culture, and especially, what is expected of us to avoid the sometimes painful moral judgment of others. However, in context to this study, the moral domain relates to choosing a frame of reference in setting context of social actions in order to prepare a right course of action for attaining a goal or in understanding causation and intentions of others. Goals create intentions for action, which sometimes must be adjusted based upon the current situation and what is acceptable or expected behavior given the context of the setting. Expectations are learned through socialization and come from commonly shared meanings within our culture, constrained by our place in the social structure as well as our own capabilities of attaining our goal. The expectations could be for following some standard of behaviors or refraining from others, plus the degree to which they are expected to be followed and how strictly they are enforced, as well as how likely it is we would suffer by bending the rules. Expected behaviors are organized around social identities as typical actions which reinforce the identity, which are mental structures that include sanctioned actions, character traits, appearances, settings, ways of speech, etc. that are commonly brought to mind when the identity type comes to mind.

There is a strong connection between moral judgment and emotion, which can produce strong feelings of emotion almost instantly when witnessing others do good deeds, break expected norms, or cause harm to others or themselves. Negative moral judgments are more negative when we infer that

the infracting party meant to do it. If there appears to be intention behind an infraction, this causes the moral intuition to judge more harshly, while harsh judgments are partially assuaged after finding out that others actions were in fact unintentional. Thus, judgment includes estimations of others' intentions, which can be difficult to read if we and the other party are interpreting the situation or our identities in differing ways. Misjudgments often include the misreading of a situation and the assumption of another's intention or behavior in a way that violates our reading of the scene, which may in fact be logical given an entirely different situation the other is experiencing. And while there are many seemingly different moral scenarios and rules for appropriate behavior, the search for defining the core set of moral imperatives forming the bedrock of morality goes back to their first codification in stone.

That search has also occurred relatively recently in the human sciences, in research and theory construction to determine the universal building blocks of morality, as well as just how they may have evolved. This research has interest for many other fields, as human behavior and the judgment of it relates to all the other social and behavioral sciences, especially political science, as well as the biological sciences in the search for their functional origins in the brain in relation to cognition and emotion. Jonathan Haidt's *Righteous Mind* introduced Moral Foundations Theory to the general public and reinvigorated psychological study of moral judgment. Its subtitle sought to answer "why good people are divided by politics and religion," which according to MFT, was due to a handful of moral intuitions honed by evolution through the process of human cultural evolution. These intuitions act as the building blocks from which cultural systems coalesce around the rules of the game that regulate group living, "who is in the group and who is out" (Haidt, 2012).

However, does simply knowing that there *are* intuitional moral foundations actually explain "why good people are dividing by politics and religion," or does that simply explain that they are divided? What would ultimately answer the why, the how and what causes these foundations to emerge and not others? And why are moral foundations *not* "equipotential" or "equally likely" (Joseph *et al.*, 2009) to be held by those having different ideological positions? How are emotions involved and perhaps essential to the biological, psychological, social, and cultural mechanisms which underly morality?

Fiske (1992) provides a clue how the interlocking sets of mechanisms that work to make cooperative

social life possible, which can be used as a roadmap for organizing analytics to see how the puzzle fits together:

*“When a **goal** varies as a function of situation and differs consistently among individuals, it is called a **motive**, but when the same goal is consistent and the widely shared it is called a **value**. When a shared goal is observed from the point of view of its functions for the collectivity, it is called a **norm**, and when individuals insist that they and others must pursue it, it is called a **moral standard**. When people justify the legitimacy of a social system with reference to such a purpose, it is called an **ideology**.” Fiske (1992: 698)*

Haidt’s Moral Foundations Theory (MFT) attempts to identify foundational moral building blocks, spurred by the research of his academic mentor Fiske’s Relational Models Theory (see **Fig. 4-1**), as well as Fiske’s mentor Shweder’s Big “Three” Ethics (see **Fig. 1-3**), both originating from cross-cultural research attempting to find universals of social relations and moral judgment, respectively. Each emerged from research of cultural systems valuing aspects of morality that differed from modern, Western theoretical models tending to focus more on individuals and rights, whereas much of the world focuses on duty and purity (Haidt, 2012). All of these theories are examples of theories of constrained relativism (Verweij, 2007), an umbrella term for theories constrained and grounded in the realities of social-neurological evidence. Such theories can be thought of as TYPE theories, where the vast array of differences across human systems and behavior emerge from a combinatorial system involving a small set of basic units (Verweij, 2007).

Moral Foundations Theory exemplifies a constrained relativistic theory, where such types aren’t seen as mutually exclusive, but rather functioning together to different degrees producing variation among cultures and subcultures, which weight MFT’s six foundations to vary degrees, creating signature cultural clusters. The foundations are characterized as moral “tastebuds” over which cultural “tastes” differ (Haidt, 2012). Yet, while MFT provides an empirical framework for measuring these clusters, exactly why the clusters have these particular tastebud “signatures” is not explained by the theory. Bruce (2013) sought to unify MFT and the Big “Three” Ethics with Plural Rationality Theory’s Group-Grid cultural biases, to create an empirical framework for testing “how and why people behave the way they do” according to their political worldview and cultural biases (Bruce, 2013: p. 44).

Despite its popularization and influence within Moral Psychology, other theories take issue with MFT, both theoretically and empirically. Some from within moral psychology characterize MFT's list of foundations as lacking. Graham *et al.* (2013) explain MFT is not meant to be exhaustive of all the possible foundations and is open to revision. One challenger theory critiques MFT's binding and individualizing foundations as attributable to differences in ideological constructs of Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) (Kugler, Jost, & Noorbaloochi, 2014). Another challenger theory acknowledges this critique and offers an evolutionary model of moral foundation based upon group coalitional strategies (Sinn & Hayes, 2016). Another theory, Morality-As-Cooperation (MAC), bases its "foundations" on well studied evolved cooperative strategies such as kin-selection, reciprocal altruism, competitive altruism, and property rights (Curry *et al.*, 2019). A third offers both a critique of, as well as a complement to, Moral Foundations Theory, one which posits moral conduct can be systematically seen to emerge from two behavioral systems regulating approach and avoidance with underlying "foundational" moral motives (Janoff-Bulman & Carnes, 2013). It is possible to reconcile the differences between MFT and these challenger theories by constructing a combined model of their analytics.

Beginning with this last competing theory first, the Model of Moral Motives (MMM; Janoff-Bulman *et al.*, 2008; 2013; 2015) maps the moral domain to the two fundamental dimensions of motivation and regulation of behavior, Approach and Avoidance. However, rather than being two opposite ends of one continuum, Approach and Avoidance have been shown to be controlled through dual processes of an Affect System providing appetitive and aversive information processing (Cacioppo *et al.*, 1999). They produce a behavioral activation system (BAS) sensitive to reward and a behavioral inhibition system (BIS) sensitive to punishment, each having distinct neural substrates (Janoff-Bulman *et al.*, 2008). They represent two self-regulatory strategies reflecting different ways of guiding behavior towards some goal or away from an anti-goal, mechanisms that can become habitualized and lead to different outcomes (Heimpel *et al.*, 2006). Revised reinforcement sensitivity theory (RST; Gray & McNaughton, 2000) provides more detail on the activation and inhibition of avoidance and approach behaviors which MMM generalizes, adding Fight-Flight-Freeze System (FFFS) as a third motivational system that handles avoidance behaviors, with BIS providing inhibitory control over both approach (BAS) and avoidance (FFFS ); more on this later.

The Model of Moral Motives applies these two self-regulatory strategies to the moral domain, positing that morality is governed by both a proscriptive moral logic of protecting against harm through inhibiting behavior, as well as a prescriptive logic of providing nurturance through activating prosocial behaviors, both of which enhance group living. Moral proscriptions focus on prohibitions (“should not’s”), while moral prescriptions focus on positive obligations (“shoulds”) (Sheikh & Janoff-Bulman, 2010). These two types of moral motives reflect separate types of self-regulatory strategies producing different moralities (Janoff-Bulman *et al.*, 2009).

Proscriptive regulation requires monitoring immoral thoughts and urges and avoiding harmful actions towards others to avoid what the group deems “should not” be done, while prescriptive regulation requires monitoring for moral opportunities to do good deeds, care for others, and (Janoff-Bulman & Sheikh, 2011). These differences in social monitoring would produce very different emotion dynamics, with prescriptive emotions focusing upon positive emotions like Trust, while proscriptive monitoring focus upon immoral acts produces Shame (Janoff-Bulman & Sheikh, 2011), the emotion taboo in Western cultures (Scheff, 1983), the source of repression and rigid conformity (Scheff, 1988), and recursively compounded when unaddressed between people (Scheff, 1990). The phenomena of proscriptive moral overregulation paradoxically producing “a greater inclination to morally transgress and a greater inclination to feel shame as a result of violating an internalized prohibition” (Janoff-Bulman & Sheikh, 2011), seems to be the direct result of these unintended consequences of Shame.

## Model of Moral Motives

		PERSPECTIVE FOCUS		
		SELF FOCUS INDIVIDUAL	OTHER FOCUS INTERPERSONAL	GROUP FOCUS COLLECTIVE
MORAL REGULATION	PROSCRIPTIVE PROTECTING AVOIDANCE	Self-Protecting  <b>SELF-RESTRAINT</b> Moderation	Other-Protecting  <b>CONTAIN SELF-INTEREST</b> Not Harming	Group-Protecting  <b>SOCIAL ORDER</b> Communal Solidarity
	PRESCRIPTIVE PROVIDING APPROACH	Self-Providing  <b>SELF-RELIANCE</b> Industriousness	Other-Providing  <b>ENABLE ALTRUISM</b> Helping / Fairness	Group-Providing  <b>SOCIAL JUSTICE</b> Communal Responsibility

**Fig. 26.1** - The Model of Moral Motives - *Source:*  
Janoff-Bulman & Carnes (2013: 3, Fig. 1)

The MMM posits that proscriptive and prescriptive moral regulation strategies apply across three psychological perspectives from which stem group-enhancing behavior, focused on the self, on a particular other, or on the collective, which creates six generalized moral motives as in **Fig. 26.1**. Self-focused motives either proscribe Moderation and Self-Restraint to self-protect, or prescribe Industriousness and Self-Reliance in order to self-provide. The interpersonal, Other-focused moral regulation benefits group living since other-focused motives either proscribe and restrain self-interest to protect others or prescribe and enable altruistic helping others. The Group-focused motives concern the welfare of the group. The Group protective proscriptions are rules of right and wrong enforced to ensure internal group order and solidarity, as well as to protect against outgroup influence and perceived aggression. The Group protective prescriptions provide for group welfare through a shared sense of responsibility and equality-oriented justice.

The Model of Moral Motives locates the foundations of MFT within its Six-Cell model (**Fig. 26.2** below). MFT's group binding foundations of Authority and Loyalty focus on binding together the group in Communal Solidarity, which MMM labels Social Order. MFT's individualizing foundations

of Harm/Care and Fairness/Reciprocity are characterized as the province of the Interpersonal realm, where those foundations are other-focused and fit with a “virtually complete correspondence between the two (Interpersonal) perspectives in terms of content” (Janoff-Bulman *et al.*, 2013: 5). The MMM slightly differs in its characterization of Purity, which it applies generally to all proscriptive regulation which attempts to prevent the corruption of self, others, and the collective from degradation, with Self-Restraint from personal contamination through moderation the archetype for purity.

Model of Moral Motives w/ Moral Foundations

		PERSPECTIVE FOCUS		
		SELF FOCUS INDIVIDUAL	OTHER FOCUS INTERPERSONAL	GROUP FOCUS COLLECTIVE
MORAL REGULATION	PROSCRIPTIVE AVOIDANCE	Self-Protecting  <b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity	Other-Protecting  <b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm	Group-Protecting  <b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority
	PROSCRIPTIVE APPROACH	Self-Providing  <b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty	Other-Providing  <b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness	Group-Providing  <b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Care, Fairness (Equality)

**Fig. 26.2** - The Model of Moral Motives with Moral Foundations Theory - *Sources:* Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113)

Additionally, the MMM offers as a critique to MFT that it fails to measure an additional Group binding that motivates equity within groups, which it labels Social Justice. This “liberal” group binding represents a prescriptive regulation of the group via in-kind reciprocity and equal treatment/say/opportunity (Janoff-Bulman & Carnes, 2016). While MFT characterizes Liberals as having a narrow focus on individualizing moral foundations of Care and Fairness, Conservatives are characterized as having a “conservative advantage” of a full moral palate, valuing both the Individualizing moral foundations, as well as Group level bindings of Authority, Loyalty, and Purity



(Haidt, 2013). The MMM posits Liberals, too, focus on a similar collective level binding, providing instead a prescriptive foundation envisioned as Social Justice depending on “foundations” of Welfare and Equality (Janoff-Bulman & Carnes, 2016). These concerns of welfare and equality applied at the collective level, must be distinguished and are different than the Individualizing Care and Fairness individualizing foundations (Janoff-Bulman & Carnes, 2016). Moreover, the Social Justice group binding is found to be negatively correlated with the Social Order group binding (Janoff-Bulman & Carnes, 2016).

*“when we move to the group level, the more antagonistic nature of moral regulation appears to require that we choose one or the other type of group-based morality. And thus conservatives, more sensitive to proscriptive regulation, opt for a restrictive morality that seeks to protect group members, whereas liberals, more sensitive to prescriptive regulation, opt for an enabling morality that seeks to provide for group members.” Janoff-Bulman & Carnes (2013: 13)*

This difference in group regulation is thought to represent a more measurable difference between Liberal and Conservative views of social-regulation than simply group binding versus individualistic moral foundations (Janoff-Bulman & Carnes, 2016). The MMM distinguishes this difference due to the motivations of Conservatives towards proscriptive motivations protecting the group against harm by enforcing conformity, while motivations of Liberals tend towards prescriptive motivations for providing for the good of all (Janoff-Bulman & Carnes, 2016). However, at the intra- and inter-personal perspectives, research has shown Liberals and Conservatives differ little in Self-focused or Other-focused moralities (Janoff-Bulman & Carnes, 2016). Importantly, the intra- and inter-personal moral motives have a high correlation with each other, highlighting that moral people of any political persuasion tend to refrain from harming others while also helping others, as well as engaging in self moderation and self reliance (Janoff-Bulman & Carnes, 2016).

Interestingly, further research shows that Libertarians tend to have, comparatively, very low regard for both of the Group bindings, as well as low regard for the Harm and Care foundations (Janoff-Bulman *et al.*, 2013). With respect to universal values, explained below, Iyer *et al.* (2012) also found Libertarians more strongly than either Liberals or Conservatives endorse Self-Direction, while being more moderate than both on Benevolence (Iyer *et al.*, 2012: 9). Libertarians were similar to Liberals

on the other values, except Universalism where they were substantially lower (Iyer *et al.*, 2012: 8-9), while in comparison to Conservatives were also substantially lower in conformity, security, and tradition, while moderately higher on hedonism and stimulation (Iyer *et al.*, 2012: 8-9).

The MMM includes the Self focused prescriptive motivation of Self-Reliance, producing an Industriousness striving for independence and freedom from the group, which matches MFT's additional sixth moral foundation of Liberty (Haidt, 2013). Adding both a Self-Reliance moral foundation, as well as a collective Social Justice foundation, would provide a more robust theoretical picture and potentially greater empirical discernment of the Individual, Interpersonal, and Collective moral focus of all political clusters.

Reorienting the combined MMM & MFT model in **Fig. 26.2** above to isomorphically transform rows to columns produces the following model seen in **Fig. 26.3** below.

## Model of Moral Motives w/ Moral Foundations

		MORAL REGULATION	
		Proscriptive Protect / Inhibition (Avoidance)	Prescriptive Provide / Activation (Approach)
PERSPECTIVE FOCUS	GROUP FOCUS COLLECTIVE	Group-Protecting  <b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority	Group-Providing  <b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Welfare, Equality
	OTHER FOCUS INTERPERSONAL	Other-Protecting  <b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm	Other-Providing  <b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness
	SELF FOCUS INDIVIDUAL	Self-Protecting  <b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity	Self-Providing  <b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty

**Fig. 26.3** - The Model of Moral Motives with Moral Foundations Theory (vertical) - *Sources:* Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113)

The difference of motivational factors across the different political ideological groups in US politics can be better visualized using the combined MMM and MFT model in **Fig. 26.3**. Recalling from the

first chapter of this study, the cluster analysis by Haidt, Graham & Joseph (2009) found in fact four distinct moral “palates” in American political culture having different valuations of the Moral foundations (Fig. 1.3 above). The standard presentation of Moral Foundations Theory typically features the standard Conservative and Liberal clusters, while the Libertarian cluster was augmented by adding a sixth foundation, Liberty, to the standard five foundations (Harm, Fairness, Loyalty, Authority, and Purity). Their cluster research produced a fourth cluster, which they termed “Religious Liberalism,” often going unmentioned in both the standard MFT and the MMM accounts. Including that fourth cluster in a side by side comparison using the combined Model of Moral Motives produces a more visually detailed spectrum of US political motivation below.

Matching the Moral Foundation valuation data in Fig. 1.3 to the corresponding positions of moral foundations within the MMM framework across each of the four clusters yields Fig. 26.4 below. Using a heatmap coloring scheme showing different valuation levels of foundations in the key at the bottom highlights the difference in variation between the US political “palates.” Missing are data for the untested foundation of Liberty, added as a foundation after the analysis done by Haidt, Graham & Joseph’s (2009) cluster analysis. Also missing would be MMM’s Social Justice motive, a group level binding motive which MFT lacks. An analytic combining both the MMM and MFT models could produce a more finely detailed distinction between these four US political types, as well as showing coherence between both MMM’s motivations and MFT’s moral foundations.

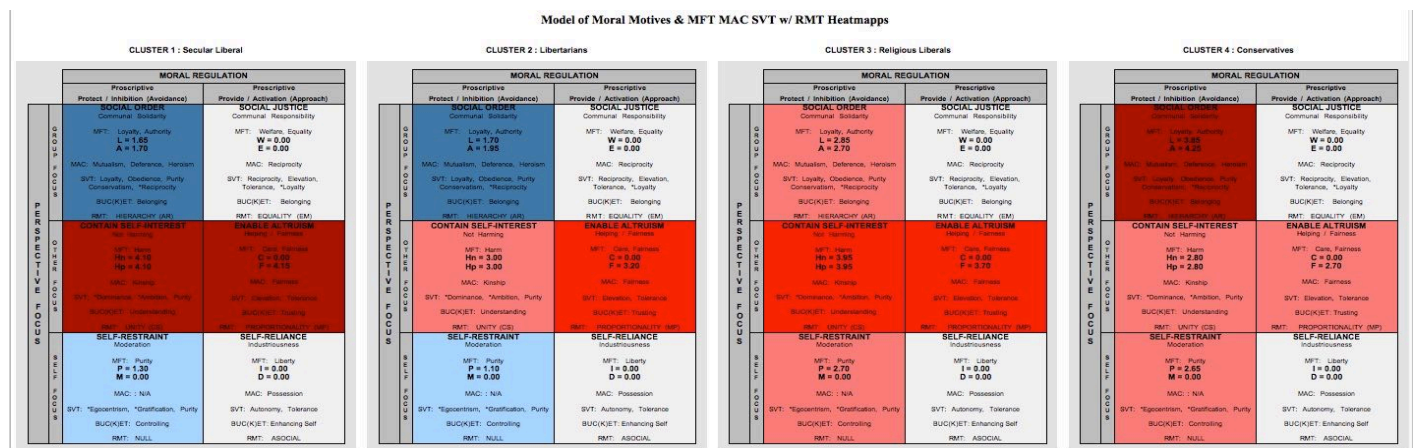


Fig. 26.4 also includes the third Cluster from Fig. 1.3 which has been relatively ignored in the

standard account of a Moral Foundations Theory (Haidt, 2012) largely focused on Liberals and Conservatives, while also later included Libertarians. However, this “missing” third Cluster from the standard MFT account represents a distinct political cluster, which in their analysis also includes the largest sample size of nearly twice the size as their Conservative Cluster (Haidt, Graham, Joseph, 2009: 113). The missing third cluster provides a similar “taste” for each moral foundation, in that like the Conservative cluster and unlike the Liberals, it places a higher valuation upon traditional binding foundations, but unlike the Conservative cluster, also highly values Care and Fairness. The differences between these four clusters would be more clearly disambiguated by including both an additional Liberty foundation, as well as a prescriptive group binding of welfare & equality for the Social Justice motivation predicted by the MMM.

The “missing” third cluster characterized as the “Religious Left,” bears a striking resemblance to the Liberal Religious Left largely excluded from the US political sphere and particularly focused upon Social Justice concerns. The social movements led by the Religious Left have been grassroots efforts to challenge the power exerted by the Establishment seeking to preserve the Social Order. The black religious clergy who led the US Civil Rights Movement of the 1950’s and 1960’s provides an exemplar of this cluster, which confronted the racial bigotry, institutional racism, and white supremacy of the Social Order’s repressive Jim Crow laws. However, the civil rights movement found little support from traditional white religious congregations at a time, as well as little general US public support, except from the far left white liberal religious congregations. Similarly, the “Religious Left” led Social Justice movements in South Africa against the Apartheid system; in Central and South America against the militarized State sponsored violence against the Indigenous, lower class & trade unions; and in India against colonial British Imperial occupation. Each Social Justice movement was typified by hostile opposition from the Establishment and minimal public support from the public at large except from the “Religious Left.” Adding moral foundations of group bindings for Welfare and Equality could expand MFT’s analytic to show a more finely detailed distinction between clusters, while their exclusion leaves Moral Foundations Theory lacking in its analysis of the foundations of political difference.

Additionally, Social Justice movements eschew violent confrontation through self-restraint against violence the Social Order uses to preserve and perpetuate its power through coercion, repression, and murder—all moral violations of containing self-interest and causing harm. Social Justice movements

maintain and build moral fortitude through the communal solidarity of positive goals such as Freedom, Equality, Inclusion, Tolerance, and Liberation. Millions of participants in those movements are buoyed by these moral foundations through a communal effort for Social Justice, while the reaction for preserving the Social Order often results in morally corrupting its adherents to support causing Harm, not Caring, and violating rules of Fairness, as well as Liberty. Social Justice movements are maligned by the Social Order as threatening chaos and violence, but staying true to the course of communal non-violent solidarity goes against the stereotype set by the Establishment, avoiding dispositional stereotypes and highlighting situational salience (Cuddy *et al.*, 2008: 130). Such moral dynamics can be made far more clear by expanding the Moral Foundations to include this wider, moral palate.

A competitor theory to MFT, Morality-As-Cooperation (MAC) (Curry, 2016), expands that palate through a systematic use of non-zero-sum game theory cooperative strategies to uncover a wider set of foundational types of cooperation. The MAC posits that morality emerges from cooperation, which game theory provides via solutions honed by natural selection serving as potential domains which lead to moral intuitions. The MAC identifies seven moral values which emerge from “well-established types of cooperation: (1) the allocation of resources to kin (Hamilton, 1963); (2) coordination to mutual advantage (Lewis, 1969); (3) social exchange (Trivers, 1971); and conflict resolution through contests featuring displays of (4) hawk-ish and (5) dove-ish traits (Maynard Smith & Price, 1973); (6) division (Skyrms, 1996); and (7) possession (Gintis, 2007)” (Curry *et al.*, 2019a: 106-107). MAC presents evidence these domains of morality provide a greater empirical discrimination as foundational units than MFT using similar methodological Questionnaire inventories and mathematical analysis methods (Curry *et al.*, 2019b: 106-107). MAC names these seven moral domains as (1) Kinship, (2) Mutualism, (3) Reciprocity, (4) Heroism, (5) Deference, (6) Division, and (7) Possession, which are supported by evidence from surveys measuring moral valence of these behaviors from 60 cultures around the world (Curry *et al.*, 2019b).

Three of MAC’s moral domains map to corresponding MFT foundations, perhaps not by definition, but in kind. MAC’s **Mutualism** matches MFT’s Loyalty (Curry, 2016), in that coordination of groups larger than kin groups require collaborative behavior regulated by coalitional dynamics, Ingroup loyalty & Intergroup rivalry (Ballet *et al.*, 2014) and theory-of-mind (Tomasello, 2009) through strategies used to coordinate how to behave to bring about group loyalty. MAC’s **Deference**

matches MFT's Authority (Curry, 2016), as in obedience and submission to authority are expected (Scheff, 1999; Thamm, 2004). MAC's **Possession** has some relation with MFT's Liberty, in that it characterizes territory ownership in the sense of property rights and theft prohibition (Curry, 2016), each chief concerns of Libertarians. This differs from the freedom aspect of Libertarianism offered by MFT (Haidt, 2012), although possession of territory, in a sense, provides a freedom of independence and expansion of self through ownership, with theft felt as a violation of self.

The other Morality-as-Coooperation domains are claimed to not map to MFT's other foundations (Curry, 2016). MAC's **Reciprocity** is stated to be different than MFT's Fairness, which MAC considers as exchange (Curry, 2016). MAC focuses upon reciprocity as a cooperative strategy, which includes conditional cooperation such as tit-for-tat which manifests in moral concepts such as trust, favors, revenge, gratitude and amends (Curry *et al.*, 2019b). Fairness, on the other hand, is characterized as more closely compared to although different than MAC's **Division**, in that allocation of shared resources can be decided through bargaining, negotiation and compromise as cooperative struggles in doling out the "pieces" fairly and rationally, while MFT's fairness instead conflates Exchange and Fairness (Curry, 2016). MAC's **Heroism** is characterized as the exercise of Dominance in such things as Bravery, Skill, as well as other-benefitting obligations such as Noblesse Oblige. However, mostly it typifies heroism as hawkishness, in contrast to its Deference moral domain, which it associates with dovishness (Curry *et al.*, 2019b). MAC's **Kinship** is claimed to not match MFT's Care, as MAC focuses on the genetic relatedness directed altruism fostering cooperation centered on allocating resources to and duty towards family.

Morality-as-Coooperation characterizes Care as too general a concept that "does not distinguish between forms of prosocial behavior with different ultimate and proximate roots" (Curry *et al.*, 2019b: 50). Care has aspects associated with multiple moral domains, such as in the context of duty or obligation to others for Kinship vis a vis cooperative breeding via alloparenting (Hrdy, 2019); Reciprocity in the care necessary to develop and nurture intimate relationships requiring mutual sharing and turn-taking; or even Heroism in care group members as in the generosity of Noblesse Oblige; or even Possession as in care to maintain property, both private, shared property or the commons (Ostrom, 1990). Additionally, proto- forms of care represent an important ethic in non-human cooperative domains (Dunbar, 1998)(de Waal, 1996). And as can be said regarding morality research of Disgust/Purity, Care too has suffered from early morality studies due to different forms of

research bias (Gilligan, 1982).

Morality-as-Cooperation also specifically omits MFT's Purity as too general because "avoiding pathogens" is not itself a cooperative problem while its corresponding emotion Disgust "is moralized only when employed to solve a cooperative problem" (Curry *et al.*, 2019b: 64). Certainly, aspects of purity can be found in several of MAC's cooperative strategies: Kinship seen from its root of kin ("kind"), as in member of a natural kind unspoiled by non-"kind" (Fiske, 1992); Mutualism seen from the Ingroup versus Outgroup distinction and coalitional goals allowing no dissent; Heroism seen from purity of will/intent in self-sacrifice, fortitude, aesthetic of practice/skill. MFT too uses Purity in a sense larger than simply the disgust dimension stemming from ingestion of poisons or contaminants, the latter of which has been shown as a purity dimension of Liberal ideologies, while not Conservative (Kahan *et al.*, 2009), the former of which Haidt characterizes as "lacking a purity tastebud." Purity's omission (or rather, its emotional manifestation as socio-moral Disgust) from morality studies may reflect a common research bias regarding Disgust and morality (Clark & Fessler, 2014), similar to Shame's absence from emotion studies until the 1970's, and then only lightly studied at that until the 2000's (Scheff, 1988).

However, MFT's and MAC's theoretical or empirical differences and congruences can be seen by mapping MAC's cooperative straits as moral motivations with the combined Moral Model of Motives (**Fig. 26.3**). While MAC posits that its moral taxonomy only emerges from game theoretic cooperative strategies, its inclusion seems possible using the context of identifying Person Focus distinctions and Moral Regulation strategies, proscriptive (should not's) and prescriptive (shoulds) rules for morality. Additionally, some of its taxonomic lineage emerges from well studied cooperative strategies shaped through natural selection identified by Fiske (1991) via Kin-selection, Reciprocal Altruism, Linear Dominance Hierarchy (Wade, 1978), as well as potentially through Property, as its modern cultural institutions representing money, contracts, bargaining, and markets, which may represent cooperative strategy shaped through evolutionary forces, namely multi-level selection and Spontaneous Order (Hayek, 1988).



## Model of Moral Motives & MFT w/ MAC

		MORAL REGULATION	
		Proscriptive Protect / Inhibition (Avoidance)	Prescriptive Provide / Activation (Approach)
PERSPECTIVE FOCUS	GROUP FOCUS	Group-Protecting <b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority  MAC: Mutualism, Deference, Heroism	Group-Providing <b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Welfare, Equality  MAC: Reciprocity
	OTHER FOCUS	Other-Protecting <b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm  MAC: Kinship	Other-Providing <b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness  MAC: Fairness
	SELF FOCUS	Self-Protecting <b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity  MAC: : N/A	Self-Providing <b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty  MAC: Possession

**Fig. 26.5** - The Model of Moral Motives & MFT w/ MCA - Sources:

Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113); Curry (2016)

To understand Morality-as-Cooperation's fit into the MMM, it must be recognized that while cooperation is assumed to be a unitary group level activity, it occurs across three different levels of

organization. The ontological structure of cooperation includes (1) Social Behavior of the Individual, (2) Interrelationship between the dyad, and (3) Social Structure of the Group, focusing upon the (1) self, (2) other, and (3) the group. While **Fig. 26.5** shows a potential best fit mapping of MAC cooperative strategies to MMM cells, their matching can be thought of in the most general of contexts, perhaps in their original natural selection context of emergence. Kinship's basic pattern is protection within the kin group, the original groups that only later grew beyond kin, which in the MMM offered the original protection from harm or care by kin, thus the other focused proscriptive cell. Similarly, the other providing cell most closely matches sharing and fairness in division of resources. The self-focus providing through resource provisioning closely matches Possession, while MAC is absent a self-prohibiting motivation of self-restraint, which in the most extreme context, such as in times of cataclysm like war or famine, involve self-sacrifice that seems to be an unidentified game-theoretic cooperative strategy, requiring more study.

At the group levels, the Social Order cell most closely matches Mutualism, in its correspondence with Group loyalty, and Deference, in its correspondence with obedience to authority. Similarly, Heroism represents restricting the use of power for moral purposes, such as in Valor or Noblesse Oblige, which places it in dichotomous moral balance with deference to moral authority, identifying an aspect of the Social order around a complementary power dichotomy, which MAC labels as Hawkishness and Dovishness. Mutualism, Deference, and Heroism in these contexts work together as cooperative strategies to maintain hierarchic social orders. The Social Justice cell was offered by Janoff-Bulman & Carnes as a group binding motivation centered around the welfare and equality for all members of the group, which implies reciprocity in the sense of the group reciprocating equally towards each member, rather than simply tracking exchange between members.

However, this identifies an important dynamic of Reciprocity, wherein two general types exist: Authority-Governed Complimentary and Interest-Governed Symmetry (Habermas, 1990). Habermas identifies these as general patterns of reciprocity at the Preconventional level of cognitive development (Kohlberg, 1990) which children must navigate with adults (Authority-governed) and peers (Interest-governed), with each having both a cooperative and conflict form (cf Habermas, 1990: 148). The authority governed complementarity exists in the power differential between the child and adults, where submission to authority is cooperative when both child and adult are cooperatively using low power, while conflict arises when the child attempts to reverse the roles of

submission and exercise power challenging authority, creating conflict.

Thus, in some sense, the “moral” cooperative strategy maintaining Social Order would require low power exercised despite a differential in potential power, while Social Justice would require high status afforded to all despite differences in potential status “rank.” These dynamics will be explored in the next chapter, but for now, MAC’s Reciprocity as in exchange will be placed in the Group Provisioning cell in the context of symmetrical exchange, although its other complementary exchange should be noted.

Also of note with regards to Morality-as-Coooperation is a recent advance to the theory in the identification of a combinatorial system through blending of cooperative strategies, which provide a full taxonomy of moral “molecules” emerging from blending MAC’s seven game-theoretic cooperative strategies (Curry, Alfano, Brandt, & Pelican: 2021). Similar to the blending of Plutchik Primary emotions creating secondary, tertiary and higher blends (**Fig. 25.2**), Curry and colleagues offer an explicit taxonomy of dyadic blends of each unique combination of “primary” moral strategies, yielding a total of 21 moral molecules.

	Mutualism	Exchange	Hawk	Dove	Division	Possession
Kinship	Fraternity	Blood Revenge	Family Pride	Filial Piety	Gavelkind	Primo-geniture
Mutualism		Friendship	Patriotism	Tribute	Diplomacy	Common ownership
Exchange			Honour	Confession	Turn-taking	Restitution
Hawk				Modesty	Mercy	Munificence
Dove					Arbitration	Mendicance
Division						Queuing

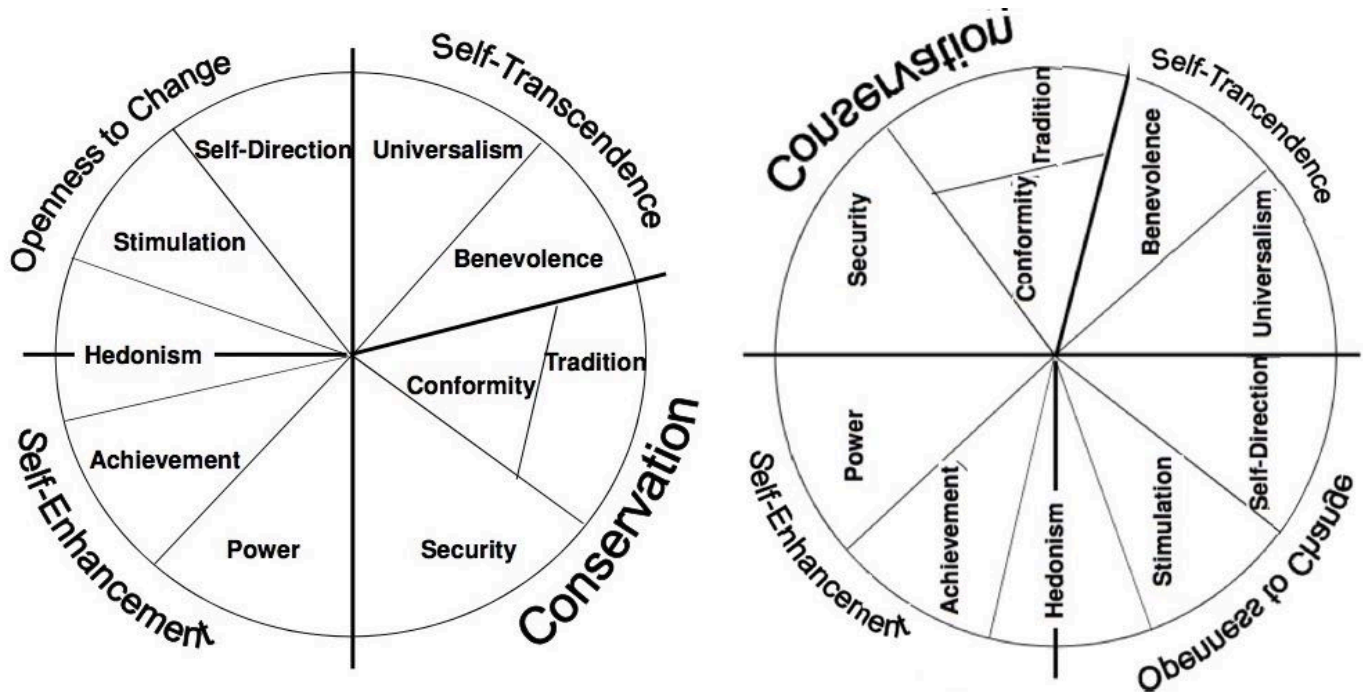
**Fig. 26.6** - Morality-As-Cooperation Moral Molecules - *Source:* Curry, Alfano, Brandt, & Pelican (2021: 7, Table 2)

Curry and colleagues define a taxonomic notational system for indexing every unique combination of the seven Moral Strategies, 127 in all, although they also point out that each strategy also can represent its inverse, an immoral strategy, of which blends of moral and immoral strategies would yield a far larger combinatorial space, such as “honour (+heroism, +reciprocity) amongst thieves

(–possession)” (cf Curry et al., 2021: 13, Notes 7&8). This highlights the complexity of social patterns and the judgement of morality, where competing interests, power dynamics, and contingencies may lead to brokered cooperative strategies which combine moral and immoral strategies that represents mixed moral behaviors, akin to ambivalent emotions. This moral combinatoric system holds great promise for mapping semantic labels to distinct social patterns in concert with MMM’s differentiation between person perspective and regulatory strategy, providing a much finer toolset in understanding motivations in complex human social patterns. It may also hold the key to the construction of a universal analytic to validate Consilience through its integration with emotion theory, which requires a few more analytics.

While the MMM describes different motivations driving moral regulation, when the goals that produce such motivations are consistent and widely shared across the group, they are called values (Fiske, 1992). Values are beliefs representing desirable “trans-situational goals that vary in importance and serve as guiding principles in the life of a person or a group” Schwartz (2007: 712). They serve as socially desirable standards used to organize goals and communicate with others in order to gain cooperation towards goal attainment (Schwartz, 2012). Schwartz Value Theory (SVT) provides a cross-cultural, empirical model of a basic set of ten “motivationally distinct types of value” running along two bipolar dimensions, which are mapped around a circumplex graph having four major groupings. SVT posits that values represent conceptual beliefs motivating action towards goals that are “requirements of human existence...meet(ing) the needs of individuals as organisms, requisites of coordinated social interaction, and survival and welfare needs of groups” (Schwartz, 2012: 4).

SVT places these universal motivating value locations around a circle, with values proximally close sharing a positive correlation while values on opposites sides having an oppositional tension (Schwartz, 2012). The ten basic values are a set of value categorizations dividing a circular motivational continuum in which the combination of every adjacent value reveals an underlying “motivational emphases” (Schwartz, 2007), while values diametrically distant tend to restrict or oppose values on the opposite side of the circumplex (Schwartz, 2007). Individuals prioritize values, holding many of the values in different situations and contexts. Opposing values tend to compete in single actions and individuals usually choose one that is most psychologically consistent with their view of the situation (Schwartz, 2012).



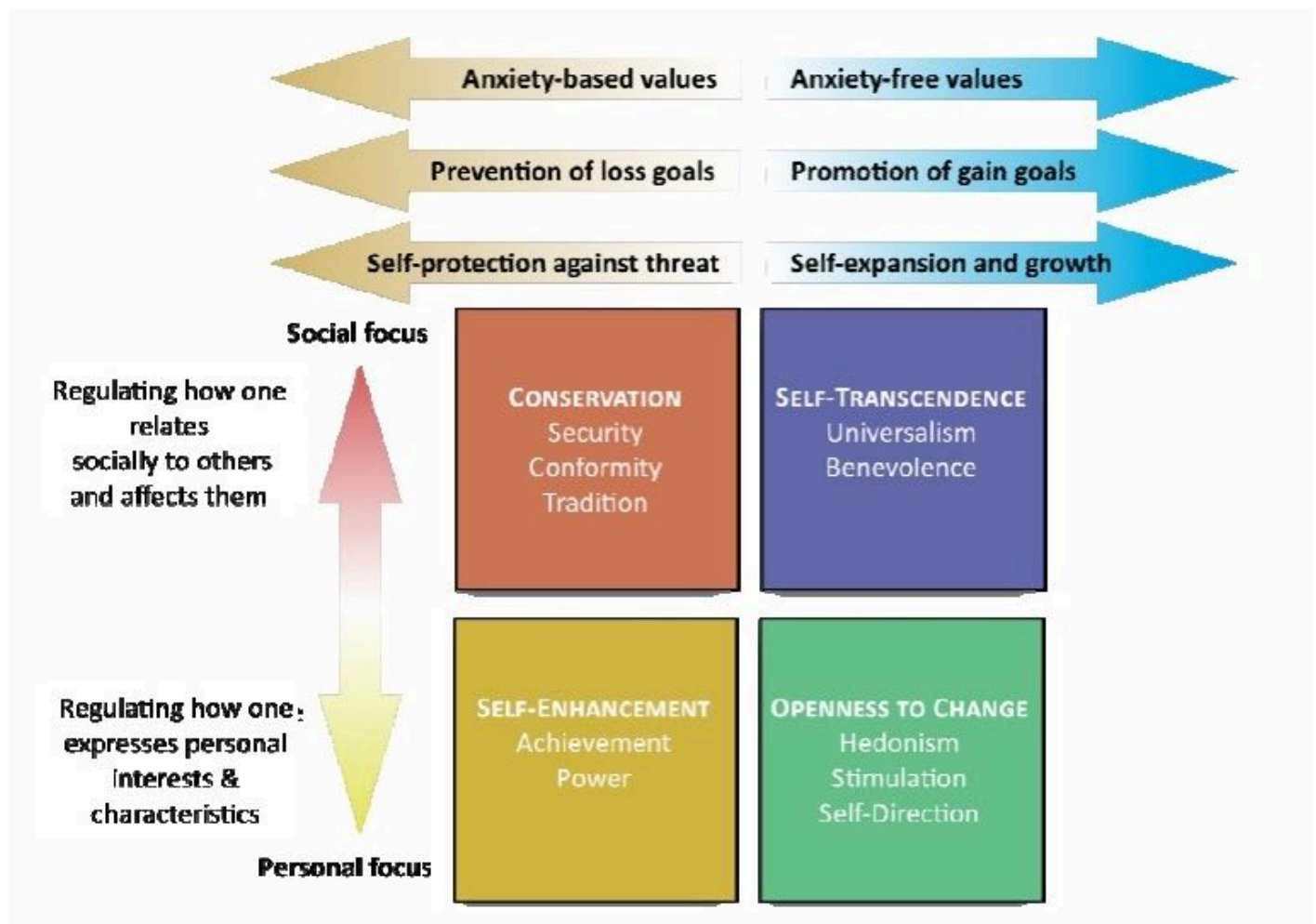
**Fig. 26.7** - Schwartz Value Theory Circumplex & Isomorphism -

Source: Schwartz (2012: 9, Fig. 1)

The SVT Circumplex on the left in **Fig. 26.7** has one diagonal axis running from conservation versus openness to change (i.e., tradition, conformity, & security versus self-direction & stimulation), while the other diagonal axis measures self-enhancement versus self-transcendence (i.e., achievement and power vs. universalism and benevolence) (Sinn & Hayes, 2016). Similar to the Interpersonal Circumplex (IPC) (**Fig. 5.4**), the SVT Circumplex can be isomorphically transformed, by rotating counter-clockwise 90° and flipping horizontally (or simply flipping it 180° along the Self-Enhancement to Self-Transcendence axis), without losing the structural relationships between values. Such a transform to the SVT Circumplex produces the right image in **Fig. 26.7**, which shares a curious relationship to the transformed image in **Fig. 5.4** representing the integration of IPC's main axes with the two interpersonal personality traits Extraversion and Agreeableness and their two aspects, which also helped to locate Trait Affiliation (cf DeYoung *et al.*, 2012).

This isomorphic transformation of the SVT Circumplex also aligns it with the vertical MMM, in that the upper half of the right image, Conservation and Self-Transcendence, are group level focused while Openness to Change and Self-Enhancement are personal focused. This similarity in orientation between the transformed SVT Circumplex and the MMM is more evident in a quadrant

diagram of the SVT, **Fig. 26.8** below. It too has been also modified from the original in Schwartz (2012: Fig. 2, 13), with Personal and Social focus flipped from the original image to align the Social focus atop and personal below, showing a similarity with the MMM's top Group-focus and bottom Self-focus, while the left and right Value columns correspond to protection based and provision based motivations. The quadrant model below matches and more clearly shows the alignment of values in the transformed circumplex in **Fig. 26.7** (Right image), although it differs from the circumplex model in losing the exact placement of value alignment around the circle, representing a more generalized model.



**Fig. 26.8** - Schwartz Value Theory Quadrants (vertically flipped) -

*Source:* modified from Schwartz (2012: 13, Fig. 2)

In this quadrant model, the colors of Schwartz's quadrant model in **Fig. 26.8** are original to Schwartz (2012) and do not have any correlation with quadrant colors of the Social Self Model.

However, the axes of the quadrant model are important. The horizontal x-axis shows Self-Protection/Prevention against loss versus Self-Expansion/Promotion of gain. The left and right halves of **Fig. 26.8** are similar to the prohibition and provisioning aspects of motivational regulation in the MMM. The vertical y-axis show Social and Personal Focuses flipped vertically from the original in Schwartz (2012) to align with the Group and Individual focus vertical alignment of the MMM's Group and Individualizing orientations in **Fig. 26.3**. While the SVC labels of Group and Personal seem to match the Group-focus and Self-focus of the MMM, they are not equivalent.

The Schwartz Value Survey and Questionnaire measure the priority people give values, and thus, the underlying motivations, which differ between people. Values are also commonly grouped into wider, superordinate value orientations, as can be seen in the four quadrants as Self-Enhancement, Conservation, Openness to Change, and Self-Transcendence. The structure of superordinate categories, as well as the ten basic values and their relations, "are discriminated nearly universally" and common to all societies studied (Schwartz, 2012: 12-13). And while individuals differ in the priority assigned to values, there is common agreement across societies in a hierarchical ranking of values from least important to most (Schwartz, 2012: 14).

However, salient to the MMM, a different way of grouping the SVT Values would be according to their focus upon Self, Other, and/or Group. Most of the ten basic values are clearly focused on one of these person focuses, while a few are focused on both Group and Self, as these focus levels are not completely differentiated in the Survey or Questionnaire, which complicates a one-to-one mapping with the MMM. The chart below shows each of the ten basic values, with a corresponding defining goal, associated key concepts related to the value, and a hypothetical person focus.



### Schwartz Theory of Basic Values

Value	Defining Goal	Focus	Concepts
Self-Direction	Independent Thought & Action	Self	creativity, freedom, choice, curiosity, independence
Stimulation	Excitement, Novelty & Challenge	Self	varied life, exciting life, daring
Hedonism	Pleasure or Sensuous Gratification	Self	pleasure, enjoying life, self-indulgence
Achievement	Personal Success according to Social Standards	Self / Other	ambition, success, capability, influence, intelligence, self-respect, recognition
Power	Social Status & Prestige Control or Dominance	Self / Other	authority, wealth, social power, preservation
Security	Safety, Harmony, & Stability	Group / Self	social order, family security, national security, clean, reciprocity
Conformity	Restraint of Actions & Impulses from Harm or violating Social Norms	Group / Self	obedience, self-discipline, politeness, loyalty, responsibility, honoring elders
Tradition	Respect, Commitment & Acceptance of Cultural Ideas & Practices	Group	respect for culture, humility, devotion, moderation, spiritual practice
Benevolence	Preserving & Enhancing Welfare	Group	helpful, honest, forgiving, responsible, friendship, belonging, meaning
Universalism	Appreciation, Tolerance & Welfare	All	social justice, peace, unity, wisdom, ecological conservation, harmony

**Fig. 26.9** - Schwartz Theory of Basic Values - *Source: Schwartz (2012: 5-7)*

The first three values listed in **Fig. 26.9** of self-direction, stimulation and hedonism are personal focus values related to self-expansion and growth, part of the openness to change orientation, and by definition, self-focused. The next two values, achievement and power, are also personal focus values for self-enhancement in the pursuit of personal success and to protect status (Schwartz, 2012). While part of the self-enhancement orientation and seemingly self-focused, achievement and power both have an other-focus in the relation or comparison of self to others, whether according to some identity standard or practically in the preservation of status and control over others.

The Conservation values of security, conformity and tradition have group level focuses in the sense of motivations which benefit groups via protecting from threat, by requiring order. Security values typically concern the harmony and stability of groups from the dyadic size of the married couple, to families, to in-groups, up to the size of nation states. Conformity preserves social norm following through proscriptive actions to limit harming groups, interaction between people, or selves. Tradition concerns perpetuating time-honored practices of one's culture, often with the proscription of inhibiting the practice of outgroup cultural practices. Each of SVT's Conservation values can be seen as focused towards maintaining Group stability, conformity, and authority through sacrifices of individual freedom from cultural identities, actions and traditions, thus acting at both Group and Self levels. The Self-Transcendence values of benevolence and universalism, however, occupy definite group level focus, with benevolence focused towards the in-group, although this can also be



considered an other-focus towards individual others whom are co-members of the in-group, while universalism is inclusive of all groups and beyond (Schwartz, 2012).

SVT also posits that adjacent values share an underlying motivational focus, which aren't quite the same as Plutchik's blended emotions, but rather a motivational space which combines aspects of both values. The pairing of adjacent SVT values reflects a motivational space around the circle, with the 10 adjacent pairing producing twelve motivations, although the motivational space is divided arbitrarily and represents a continuous space upon which all interpersonal motivations are found. While Schwartz (2005) has verified the value terms are recognized cross-culturally, the motivation label for the product of value blends is not given. This study offers up short-hand "thematized" single words for these hypothetical motivations useful for labeling and coordinating with other theories, but which are not identified by Schwartz as empirically validated terms.

### SVT Motivational Continuum

<u>Value Locations</u>		<u>Motivation</u>	<u>Theme</u>
Power	Achievement	social superiority and esteem	Ambition
Achievement	Hedonism	self-centered satisfaction	Egocentrism
Hedonism	Stimulation	desire for affectively pleasant arousal	Gratification
Stimulation	Self-Direction	intrinsic interest in novelty and mastery	Autonomy
Self-Direction	Universalism	reliance on one's own judgment and comfort with diversity of existence	Tolerance
Universalism	Benevolence	enhancement of others and transcendence of selfish interests	Elevation
Benevolence	Conformity	normative behavior favoring close relationships	Reciprocity
Benevolence	Tradition	devotion to one's in-group	Loyalty
Conformity	Tradition	subordination of the self in favor of socially imposed expectations	Obedience
Tradition	Security	preserving existing social arrangements that give certainty to life	Conservatism
Conformity	Security	protection of order and harmony in relations	Purity
Security	Power	avoiding & overcoming threat of uncertainty by controlling relationships & resources	Dominance

**Fig. 26.10** - Schwartz Value Theory Motivational Continuum - *Source:* Schwartz (2012: 9-10)

Each of the motivations in **Fig. 26.10** can be seen to be part of the motivational continuum guiding human relations. The dynamics of adjacency similarity and opposite opposition found by empirical studies of values that helped place them upon the circumplex in **Fig. 26.7** are a result of the circumplex methods which place terms in oppositional tensions across from each other on the circle (Gurtman, 1997). The Values circumplex, and its accompanying Motivational circumplex, therefore

have additional properties of circumplexes which can help to dissect the dynamics which differentiate between “moral foundations” underlying political ideology. The SVT circumplex has two superordinate axes, a Self-Enhancement to Self-Transcendence axis and a Conservation to Openness to Change axis (Schwartz, 2012), both orthogonal to each other which help to orient the motivational dynamics any two points within the space, or, any other analytic models which can be mapped to the motivational space.

An additional theory offering a sharp critique of Moral Foundations Theory’s characterization of its binding and individualizing foundations is Evolutionary-Coalitional Theory (ECT) (Sinn & Hayes, 2016), which utilizes SVT’s value and motivational dynamics while focused upon the internal and external dynamics of groups. ECT offers a coalitional theory of political ideology focusing upon intra- and inter-group competition which produce several different group level motivational dimensions driving political ideology (Sinn & Hayes, 2016). Within- and between-group dynamics represent different adaptations to ancestral environments in which “us versus them” cohesive morality emerged under selective pressures of coalitional competition between groups over resources (Sinn & Hayes, 2016:3). ECT posits ingroup and between group dynamics form a better discernment of differences in political ideology through Right Wing Authoritarianism and Social Dominance Orientation personality dimensions and that MFT is simply “rediscovering well-known ideological constructs of SDO and RWA,” (Sinn & Hayes, 2016: 15).

Right Wing Authoritarianism (RWA; Altemeyer, 2006) is defined as “intra-group or defensive ethnocentrism, emphasizing ethnic devotion, collective security, and cohesion” (Sinn & Hayes, 2016: 5). Authoritarianism refers not to those whom assert authoritarian control, but rather, to the psychological personality of Authoritarian followers whom show high levels of deference to traditional authority, aggression in the name of authority, and conventionalism (Altemeyer, 2006: 9). A strong correlation exists between the tendency to see the world as threatening and authoritarianism (Thórisdóttir & Jost, 2011). Empirical evidence shows that Right wing Authoritarianism (RWA) is “robustly correlated with authoritarianism, prejudice and discrimination against disadvantaged groups” (Jost, 2006: 4-5).

Social Dominance Orientation (SDO; Pratto *et al.*, 1994), describes a personality orientation towards exerting dominance, particularly in pursuing self-enhancing power exerted against outgroups (Sinn

& Hayes, 2016). SDO is defined as “inter-group ethnocentrism stressing superiority, exploitation, and group-based dominance” (Sinn & Hayes, 2016: 5). SDO Social Dominance Orientation (SDO) “predicts sexism, racism, classism, homophobia and wide range of prejudicial outcomes” (Jost, 2006: 4-5).

Right Wing Authoritarianism concerns the solidarity of in-group against out-group threats while Social Dominance Orientation concerns individual drives for achievement and power (Kugler et al, 2014). Research of RWA and SDO spanning decades characterize the moral content of these two ideologies as something which political psychologists feel cannot be justified as “moral (as opposed to ‘Amoral’ or ‘Immoral’)” in any philosophically ethical sense (Jost, 2006). Both RWA and SDO have been found to be correlated with Conservatism, as well as to “Conservatism’s intuition of ingroup, loyalty, obedience to authority, and enforcements of purity” (Jost, 2006). Moreover, Haidt and colleagues also find correspondence of MFT foundations with Schwartz Value Theory, due partly to design of the Moral Foundations Questionnaire used to measure the foundations being partially constructed from subsections of the Schwartz Value tests for Fairness and Harm, as well as the RWA tests for Authority (Graham & Haidt, 2009). Moral Foundation Theory research too finds the correlation between RWA, SDO and Conservatism (Graham & Haidt, 2009), showing Conservatives score highest in both measures, while Secular Liberals measure lowest (Haidt et al, 2009).

Evolutionary-Coalitional Theory (ECT) offers that Conservatism, beyond simply a being sensitive to a “binding” collective motivation, is better described as an alliance of two motivational dimensions corresponding to an authoritarian motive concentrated on the “defensive solidarity in response to outgroup threat” central to RWA and a dominance motive concentrated on the “hierarchical exploitation of outgroup” central to SDO (Sinn & Hayes, 2016: 2). The authors offer that MFT’s Authority, Loyalty and Purity “binding” foundations would be better served as a “binding and dividing” foundation reflecting intragroup binding and intergroup division (Sinn & Hayes, 2016). Moreover, ECT’s coalitional dynamics help to highlight the oppositional tension between the “individualizing” harm fairness foundations and SDO (Sinn & Hayes, 2016).

ECT posits Liberalism expands beyond MFT’s individualizing focus to one of a universalizing motive acting at the collective level as an “anti-coalition/hierarchy response to within-group exploitation threat” from authoritarian and dominance motives (Sinn & Hayes, 2016: 2). This conjecture has

support from evolutionary theories of the origin of collectivized intervention against morally deviant behavior in the form of egalitarian bands suppressing dominant bullying (Boehm, 2000) and establishing reverse dominance hierarchies to prevent any of its members from dominating others (Boehm, 1993). ECT posits MFT lacks a Universalizing group binding, failing to recognize the “universalism exhibited by the left” (Sinn & Hayes, 2016: 17).

ECT conceptualizes MFT’s individualizing Harm and Fairness as a Universalizing motive, while the binding Authority, Ingroup, and Purity reflect an Authoritarian motive (Sinn & Hayes, 2016: 15). The “Conservative” group bidding foundations of Authority, Ingroup, and Purity are critiqued as amoral, as they have driven the deleterious effects of reactionary movements and cannot be considered to be on the same moral plane as Care and Fairness (Kugler et al, 2014). ECT offers that Conservatism is better modeled by authoritarian and dominating motives, while Liberalism by a universalizing motive, which “shows a strong negative correlation with both RWA and SDO and predicts liberalism” (Sinn & Hayes, 2016: 6). ECT posits SVT’s superordinate value orientations equate with Authoritarian and Dominating motives, as “Conservation values correlate with RWA, self-enhancement values with SDO, and power and security values correlate with both” (Sinn & Hayes, 2016: 5). The relations become more clear with SVT’s Quadrant model (**Fig. 26.8** above), where RWA and SDO correlate with the left Social quadrant and left Personal focus quadrant, respectively.

The Schwartz Value Theory Quadrants model in **Fig. 26.8** was altered to flip the Social and Self focuses to help orient the dynamics outlined in the graphic with the vertical Collective and Individual axes of the Social Self Model and the vertical Model of Moral Motives (**Fig. 26.5**). Collectivism and Individualism constructs are not only cultural, but are found within studies at all levels, including individual psychologies where group needs must be balanced with individual needs (Gelfand *et al.*, 2006). They figure centrally in cross-cultural constructs of the Horizontal Vertical Individualism Collectivism (HVIC; Triandis & Gelfand, 1998) model, where the dynamics of Collectivism-Individualism and Horizontal-Vertical (referring to ways in which people compare themselves to others highlighting either similarity between people or differences between people, respectively) together produce a pattern of four cultural combinations of the two HVCI constructs (Triandis & Gelfand, 1998). Additionally, it is the Horizontal and Vertical constructs which modulate cultural tightness and looseness of the Social Order (Carpenter, 2000)(Gelfand *et al.*, 2006). However, Collectivism and Cultural Tightness are different constructs that allows for tight collectivism and

loose collectivism, as well as loose individualism and tight individualism (Triandis & Gelfand, 1998).

The Collectivism-Individualism axis in the SVT Quadrants, Social Self Model, and Combined MMM have been oriented by this study to run vertically with Collective focus above and Individual focus below. The Collective-Individual dynamic can best be understood through the self-construal process (Markus & Kitayama, 1991). Cross cultural research has found that the self-concept differs in cultural collectivist societies, where self-construal tends to view self as interdependent with one's group(s), while within individualist cultures, self-construal tends to view the self as independent and autonomous from the group(s), producing either interdependent or independent senses of self (Markus & Kitayama, 1991). Thus, self-construal focused upon one's place in relation to the group tends to emphasize shared external similarities or interdependent relational roles, while self-construal focused upon the independent qualities within a self (traits, dispositions, etc), tends to emphasize difference, separation and uniqueness (Fiske, 2014). SVT's Social-Personal focus aligns with the Interdependent-Independent self-construal process.

Similarly, SVT's horizontal axis characterizes values running from self-protection to self-provisioning; prevention of loss to promotion of gain; etc., corresponding to Horizontal and Vertical senses of self, which vary in the extent to which the self is bound by social norms (horizontal) or different culture enforces and social norms (Triandis & Gelfand, 1998). In this sense, proscriptive self-protection or prevention from loss refers to the social hierarchy, as motivations to preserve one's place can seem to be defensively oriented. Prescriptive self-provisioning or promotion of gain refers to social mobility offensively oriented in the sense of Self-Expansion (Fiske, 2014). These twin dynamics in effect define the self-agency of individuals within the context of social normativity, where individual variation from expectations are either tightly enforced or more loosely tolerated, the dynamic of Tightness-Looseness (Gelfand et al., 2006). SVT's Social-Personal focus aligns with an External-Internal self-agency process.

In both cases, values can be seen as both inside individual heads, as well as collectively shared goals externalized by normative processes, of which SVT identifies 10 which are common across all cultures (Schwartz, 2012). A cultural may promote values which are either aligned with or at odds with one's own values, or both depending upon the situation and context at cultural and individual levels. The HVCI construct is a cultural level model and the Model of Moral Motivations a model at

the level of individual regulation affected by external or internal motivations. HVCI defines the dynamics at the macro-level of four combinatorial HVCI constructs which emphasize one set of motivations over others, which apply cultural pressure upon the micro while the micro can be defined by self-construal and self-agency dynamics in which one's own motivations towards sense of self must be negotiated with cultural and social constraints. The SVT motivational continuum and universal values serves to connect the micro MMM with higher level, macro cultural constructs, allowing for the mapping of value motivations to the MMM.

Thus, Interdependent and Independent self-construal and Horizontal-vertical self-agency can help to more finely distinguish the dynamics within and across individuals in relation to culturally Ideological constraints of Right-Wing Authoritarianism and Social Dominance Orientation, and thus between Evolutionary-Coalitional Theory and Moral Foundations Theory models of moral foundations. ECT maps SVT's superordinate Conservation quadrant with RWA and Authoritarian motives and the Self-Enhancement quadrant with SDO and Dominating motives, with both Power and Security values correlated with both RWA and SDO (Sinn & Hayes, 2016: 5). This corresponds to RWA mapping to the motivational space within which Tradition, Conformity, Power, and Security value share, yielding an arc of the motivational continuum from Dominance, Purity, Conservation, and Obedience. SDO mapping to the motivation space including Security, Power, and Achievement values, yielding an arch of the motivational continuum covering Dominance and Ambition motivations.

These RWA and SDO cultural constructs in relation to SVT motivations help to define the SVT motivations placement within the MMM according to their correspondence with both MFT's foundations and moral motive's proscriptive and prescriptive regulatory logic, with an interesting relation to MAC's Cooperative strategies. This can be done by mapping not the SVT values themselves, but instead the motivational continuum "themes" from **Fig. 26.10** as shorthand terms that could correlate with MMM's moral motivations. These motivational continuum "themes" seem logical terms for each motivation description by Schwartz, and their meanings generally correspond with the logic of the corresponding moral motivational cell. The motivations to protect against threat manifest as proscriptions against certain motivations while prescriptions for provisioning self towards other motivational goals/shared values. A potential match is shown in **Fig. 26.11** below:

## Model of Moral Motives & MFT MAC w/ SVT Motivations

		MORAL REGULATION	
		Proscriptive Protect / Inhibition (Avoidance)	Prescriptive Provide / Activation (Approach)
P E R S P E C T I V E  F O C U S	G R O U P  F O C U S	Group-Protecting  <b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority  MAC: Mutualism, Deference, Heroism  SVTM: Loyalty, Obedience, Conservation, Purity	Group-Providing  <b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Welfare, Equality  MAC: Reciprocity  SVTM: Reciprocity, Elevation
	O T H E R  F O C U S	Other-Protecting  <b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm  MAC: Kinship  SVTM: *Dominance, *Ambition	Other-Providing  <b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness  MAC: Fairness  SVTM: Tolerance
	S E L F  F O C U S	Self-Protecting  <b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity  MAC: : N/A  SVTM: *Egocentrism, *Gratification	Self-Providing  <b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty  MAC: Possession  SVTM: Autonomy

**Fig. 26.11** - The Model of Moral Motives & MFT MAC w/ SVT - Sources:

Janoff-Bulman & Carnes (2013: 3, Fig. 1); Iyer *et al.* (2012); Curry (2016); Schwartz (2012: 9, Fig. 1)

Placing the Motivational Continuum terms from **Fig. 26.10** into the combined MMM in **Fig. 26.11** above proceed using the logic of proscription against or prescription for. Starred SVT motivations implies moral proscriptions against. Starting with the self-focus perspective, proscriptions against

Gratification, especially in traditional morals around sexuality, as well as Egocentrism, as in the form of negative self-centeredness such as Selfishness or Vanity, morally protect the self from impurities. Similarly for the other-focus perspective, proscriptions against using Dominance or Ambition motivations against others are judged morally good. For the group-focus perspective, the motivations of Loyalty and Obedience aren't necessarily "should nots," yet trigger moral emotions which spur moral judgments towards others. They require proscriptive motivations at the individual level corresponding to not using Dominance or Ambition, nor pursuing Self-Gratification, nor egocentric pursuits in any endeavor which threaten the group conformity by promoting harmful individual pursuits. Tension between values on opposite sides of the circumplex are visible in these group binding motivations being composed of the proscriptions against motivations on the opposite side of the SVT circumplex (Schwartz, 2012).

Similarly, the right half of SVT's Quadrant model (**Fig. 26.8**) corresponds to prescriptive motivations towards expansion and growth. For the other-focus perspective, Elevation is the term offered by Algoe & Haidt (2009) for the emotion felt when observing the enhancement of or self-less acts towards others, matching altruism or helping, squarely in the Other-focused prescriptive cell. Similarly for the self-focus perspective, the general theme of Autonomy in the sense of self-mastery and openness to intrinsic interests that lead to expansion of self's experiences and capabilities fits with the self-focused moral motivational cell. The group-focus perspective includes a motivation of Reciprocity driving social exchange, as well as a sense of fairness in that exchange, with violations of such fairness leading to moral judgments against, although in some ways different that violations of prohibition logic. A similar tension between motivations on opposite sides of the circumplex are also apparent for openness to experience being at odds with conservation motivational themes at the proscriptive group-level, matching MFT's Liberty in tension with group binding intuitions (Haidt, 2011). Other tensions are found between values in adjacent axes, such as between Universalism versus Security and Power (Sinn & Hayes, 2016).

While motivational theme placement in the MMM into a corresponding group-, other- or self-focus cell remains straight forward for most, two in particular fit multiple motivation cells, which may correspond to a propositional self-representational "themes" (Schlicht *et al.*, 2009) applied to self-agentic provisioning or protective defense within the social relational realm. The logic of keeping self or relationships morally sound rely on self-focused and other-focused proscriptive motivations,



respectively, which both have a sense of purity, as in keeping the self from impure Gratification or Self-Interest or in keeping an intimate relationship free from Dominance or Ambition. The regulation of group level Loyalty and Obedience in protection from outgroup influence or ingroup dissension produces motivation of ingroup hostility towards outgroups and enforcement of ingroup conformity, both having connotations of maintaining group purity. Thus, purity could be a glue or Grip (cf Mamadouh, 1997: 399 in Bruce, 2013) general theme acting to adhere proscriptive motivations at self-, other-, and group-foci.

The same can be envisioned of tolerance in the sense of universalizing over for all social actors and prescriptive motivations. The logic of self-enhancement in self-directed exploration of autonomy begs for a sense of toleration of deviance from group norms for sameness and conformity. Similarly, enhancement of others through caring or helping ideally would ideally apply to all others (universalizing), which requires a tolerance for differences between one's self and others. At the group-focus level, reciprocity of the groups towards individuals is ideally fairly distributed to provide for the welfare and fairness across society, which in the context of universalizing, would apply to both ingroup and outgroup individuals requiring a tolerance for all. However, this universal tolerance towards others clearly lies at odds with in-group Loyalty, identifying a motivational tension found in the dynamics of Social Justice versus Social Order. Thus, tolerance is also a glue and general theme of prescriptive motivations at self-, other-, and group-foci. In some sense this tolerance can be seen as tolerance of ambiguity of situational constraints which to apply prescriptive rules, which are open ended, as opposed to proscriptive "should not's" which are clearly defined and free of ambiguity, of which purity represents in a sense pure from ambiguity.

While Schwartz's Values are distinctly related to particular locations on motivational continuum, the "theme" terms mapped to the MMM are offered by this study as best fits for the motivational descriptions provided by pairings of adjacent values, and are somewhat arbitrary. These motivational themes guide human action and constrain moral values. Their mapping to the MMM could be enhanced and possibly corroborated by considering an even more general set of motivations that assist people's survival in groups. Humans, as primarily social beings, are strongly influenced by groups and strongly motivated to be part of groups since the "people who are more socially integrated survive better" as evidenced by numerous studies showing the positive effects of group membership and social ties upon mortality (Fiske, 2004: 12). This was particularly true in the vast

prehistory of human civilization in human survival in small groups. Additionally, groups provide a situational context that can strongly influence individual judgment and behavior overriding whatever personality traits individuals may have, so much so that generalized motivations that improve individual success within groups becomes a social selection pressure (Fiske, 2004).

A set of five Core Social Motivation to “describe, unify, and explain seemingly unconnected lines of research” found across Personality and Social Psychology literature, use the acronym **BUC(K)ET** for Belonging, Understanding, Controlling, self-Enhancing, and Trusting (Fiske, 2004: 15). Each of these are general social motivations oriented towards the person-in-situation that assist individuals to be more successful in social relationships and social groups. And while they are motivations which drive individuals to be social, they’re over application may lead to problems, many of which are at the heart of conflict.

**Belonging** represents the overriding motivation to gain inclusion in the group and underlies the other four motivations, driving the basic need for strong social relationships (Fiske, 2004: 16). It produces motivations to conform to group norms, yet has the drawback when insecure of eliciting out-group exclusion to maximize one’s own position in the group or identity (North & Fiske, 2013).

**Understanding** involves utilizing thinking and reflection to analyze social cause and effect, which can include exchanging information with others in the group to produce shared representations leading to better prediction and decision making (Fiske, 2004). It can also be a herd mentality that has the drawback of outgroup exclusion and ingroup homogeneity (North & Fiske, 2013).

**Controlling** involves the motivation of one’s own behavior affecting and being the cause of reaching one’s goal, which includes thinking when not in control and looking for ways in which to meet one’s own needs and desire for competence of one’s own actions (Fiske, 2004). Its drawback is often social dominance over outgroup members or in collectives, traditionalism which excludes against outgroups (North & Fiske, 2013). **Self-Enhancing** is the need to feel good about oneself, as in the maintenance of self-esteem “as a sociometer an indicator of their group standing” (North & Fiske, 2013: 36). The drawbacks of self-enhancement are again outgroup exclusion, while social setbacks can lead to loss of self-esteem creating negative emotions which can spiral in self-devaluation (North & Fiske, 2013). Finally, **Trusting** others is the desire to develop faith in the group and see the good in others, which is a positive social trait that leads to higher levels of empathy for others (North & Fiske, 2013). The drawbacks occur in betrayal and “shattered assumptions,” which

induce trauma and threaten the social bond and lead to rejection sensitivity (North & Fiske, 2013).

While the BUCKET core social motivations are all oriented towards enhancing individual performance in groups and seemingly group-focused, they have a resonance with the MMM and ultimately moral regulation. Firstly, each of these five social motivations align with a particular perspective focus for success in social selection. Belonging is definitely group-focused in the motivation to be identified as member of the ingroup, requiring adherence to group proscriptions for maintaining membership and group solidarity, as well as entailing prescriptive responsibilities and contributions to the group to ensure group welfare and equity, both of which might require overriding one's own individual preferences for the group. Understanding, on the other hand, is more other-directed, requiring gathering information about group situation and context and the beliefs, goals, or intentions of others in order to know how to act, which includes sharing information with others as well as "reading the room" to glean hidden information (Fiske, 2004). Controlling is more self-directed in trying to direct one's own actions towards goal achievement and competence, where group goals or the desires of others may impede personal actions remove personal control. Self-Enhancing is also identified as more self-directed while Trusting is other-directed, although typified as being more connected with affect rather than thinking (Fiske, 2004).

## Model of Moral Motives & MFT MAC SVT w/ BUC(K)ET

		MORAL REGULATION	
		Proscriptive Protect / Inhibition (Avoidance)	Prescriptive Provide / Activation (Approach)
PERSPECTIVE FOCUS	GROUP FOCUS	<b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority  MAC: Mutualism, Deference, Heroism  SVTM: Loyalty, Obedience Conservation, Purity  BUC(K)ET: Belonging	<b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Welfare, Equality  MAC: Reciprocity  SVTM: Reciprocity, Elevation  BUC(K)ET: Belonging
	OTHER FOCUS	<b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm  MAC: Kinship  SVTM: *Dominance, *Ambition  BUC(K)ET: Understanding	<b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness  MAC: Fairness  SVTM: Tolerance  BUC(K)ET: Trusting
	SELF FOCUS	<b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity  MAC: : N/A  SVTM: *Egocentrism, *Gratification  BUC(K)ET: Controlling	<b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty  MAC: Possession  SVTM: Autonomy  BUC(K)ET: Enhancing Self

**Fig. 26.12** - Model of Moral Motives & MFT MAC SVT w/ BUC(K)ET - *Sources:*

Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham, Joseph (2009: 113); Curry (2016); Schwartz (2012); Fiske (2014);

The logic above for each of the BUC(K)ET motivations allows them a tentative mapping to the combined MMM in **Fig. 26.12** above, which requires some explanation. The MMM posits broad moral motives related to regulating behavior via inhibition or activation, each of which can be focused upon the self, another person or persons, or upon the collective as a whole. While the BUC(K)ET motivations are offered with reference to person focus, their relation to inhibition-activation can be seen in their function to master a moral motivation.

For success in a collective which demands group loyalty and obedience, the motivation of Belonging will inhibit one's individualistic desires in lieu of the group's desires, leading to following group norms despite having a reservation for them. Without a strong drive for belonging, one would risk being excluded from tight collectives with strict norm enforcement. The Group focus and inhibition of personal desires for the sake of belonging in the group aligns with the Social Order motivation.

For success in dyadic interaction, the most basic condition of dyadic interaction would be to contain one's own self-interest to prevent harming the other, perhaps the basic tacit agreement of civilized interaction with others. This moral motivation eliminates the uncertainty that others may fear in risking injury in interaction (personal, social, psychological, moral, etc), allowing for the basic establishment of a shared sense of basic civility upon which all moral interaction is based. The motivation for Understanding rests upon this premise, from which shared representations or "we's" can be established, and violations of this moral motivation restricts ability at establishing social understanding with another.

For self-restraint, moderation of self-interests or desire for gratification represents a self-focus requiring self-control. In social situations, a Controlling motivation entails a "contingency between effort and outcomes" in the ability to control one's outcomes (Fiske, 2004: 20). A lack of control creates a motivation to seek out social information to help regain a sense of control. In the case of practicing self-restraint or moderation, lack of control requires self-perception that can be subconsciously influenced by a variety of situational or emotional factors that short-circuit self-control (Laird, 2012). The Controlling social motivation, needing to be effective and competent by using social perception, even in a group context requires perceiving information from the environment to align behavior towards a desired goal, whether that perception be social or

interoceptive, etc. It requires inhibiting some “automatic” behavior towards some contextual information, of which moral and social self-control both share.

What does not seem to be explained in the literature, however, are the dynamics between one’s personal motivations versus the moral judgment of others. The bridge seems to be the difference between one’s own self-conception versus the social perception of others. The Stereotype Content Model (SCM) (Fiske *et al.*, 2007) of social cognition predicts people have a stereotypical emotional response to others based on a perceived social categorization of the other, which effects the Behavior from Intergroup Affect and Stereotypes (BIAS) emotions of Pity, Contempt, Envy, and Admiration (Cuddy *et al.*, 2008). These depend upon two factors related to social structure, where ingroup-outgroup dynamics create either a general positive regard for ingroup members or negative regard of outgroup members, while differences in the social hierarchy relate to differences in status and power (Harris, Cikara & Fiske, 2008).

Social categories or identities, according to Searle’s (2010) theory of Speech Acts, are constructed from status functions, which are collectively recognized statuses assigned to a person or object by virtue of an identity. Each status function allows some collectively agreed upon “deontic powers,” which vary between rights when they are positive deontic powers, or obligations when they are negative deontic powers, along with logical functions which can make those rights or obligations conditional or disjunctive (Searle, 2010). The Theory of Speech Acts maintains deontic powers are inherent in the structure of speech acts, produced through propositions or statements, and are the glue which holds society together, since they “provide reasons for acting independent of our inclinations and desires” (Searle, 2010: 9). Status functions create sociological institutional facts, which are created through Status Function Declarations, which according to Speech Act Theory, are the basis of symbolic representational powers of language to construct the social world. While Speech Act Theory is beyond the current scope of this study, its importance to social categorization resides in the expectations for behavior social categories entail via semantic symbolic representations.

Thus, the social “perceiver” assigns a social categorization through social perception, establishing expectations for other’s rights and obligations as judged by the perceiver. The dynamics of ingroup-outgroup social cognition tend to include a bias towards a negative evaluative disposition for

outgroup members and positive for ingroup (Cuddy et al., 2008). The “group” need not be some cultural or ethnic group, but simply a social category to which the “perceiver” does not belong, but to which they assign as the identity of the other. Thus the act of social categorization (naming) creates situational conditions upon which the other would be judged, regardless of the other’s own self-perception or judgment of the situation. And perception, as this study has covered, is subject to biases emanating from physiological, psychological, social, and cultural influences which can alter perception, of which the perceiver’s own identity in the situation seems primary in that it defines whether the other is judged to be ingroup or outgroup. It is also conditional based upon the expectations according to the Relational Model logic to which the relationship between the perceiver and the other. It is no wonder that stereotyped judgement and misjudgment occur in human social cognition.

The BIAS emotions provide a glimpse into the dynamics of emotion, social structure, expectations and moral judgment in symbolic interaction, of which the case of Envy is particularly instructive. Envy represents an ambivalent emotion produced from perception of a person or group as superior in status and/or power (positive) while also having a negative regard for the person (Fessler, 1999), a mixed emotion of “grudging respect or admiration and simultaneous intense dislike” (Harris, Cikara & Fiske, 2008: 135). The SCM predicts that intergroup BIAS emotions emerge through stereotyped perceptions of persons, which for Envy comes from perceptions of outgroup social categories having higher status than one’s own social categorization for that comparison, producing a volatile ambivalence with contrasting emotion valences that “inspire(s) contrasting behavioral tendencies (passive association and active harm)” (Harris, Cikara & Fiske, 2008: 134). This volatile tendency ranging from having no or only obligatory social interaction (passive association), which Power Status Theory predicts of status conflict (Thamm, 2004), to interaction that includes active harm towards members of the outgroup, results from social structural constraints. However, far from only provoking harmful or passive actions, envy is correlated with neurophysiological reward in the perceiver, which is interpreted as motivational incentive to challenge the other’s status (Harris, Cikara & Fiske, 2008).

The ideologies of Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) are characterized by political psychologists as dimensions of personality producing behavioral tendencies which, in the case of RWA, positively correlate with “authoritarianism, prejudice and discrimination

against disadvantaged groups” (Jost, 2006: 4), while for SDO negatively correlate with concern for others, communality, tolerance, and altruism (Pratto *et al.*, 1994: 754). However, RWA and SDO must take into account sociological constructs for the influence of social structure upon social cognition, as well as cultural constructs influencing the degree of social categorization and social control, both of which represent top-down effects of higher ontological levels. Similarly, neurophysiological and biological-behavioral bottom-up effects involving autonomic functioning too are influenced by social structure. As this study posits, social structure not only has effects upon not simply emotions, but also in autonomic modal response in predictive or consequential readiness for approach and avoidance. Physiological responses can have effects upon psychological perception (Laird, 2010).

Explaining cultural differences due to correspondence to values alone resembles the subjectivist bias identified as problematic in some cross-cultural study, where “where culture is reduced to factors that exist inside the individual’s head” (Gelfand *et al.*, 2006: 1225), only rather than foreign cultures this focuses upon ideological cultures. Instead, this study posits that rather than depending on dimensions of personality, RWA and SDO are products of social structure and threats to social identities which trigger cultural protective identities, placing their functioning at the level corresponding to Plural Rationality Theory’s (PRT) biases, which will be explained below. First, however, the action logic influenced by motivations and values must be fleshed out, namely of social norms.

The cultural effects of social structural conditions (hierarchical difference in status and intergroup relations) produce predictable BIAS emotions, analogous to first-order emotions which can provoke second-order emotions in others’ reaction to them in the form of Pride and Shame (Fessler, 1999). Cultures diverge in the degree to which they value and support hierarchy, as in the Tightness-Looseness construct (Gelfand *et al.*, 2006), which affects the context in which expectations for following social norms are enforced, which for looser cultures, behavioral tendencies to punish defectors are more relaxed, such as in egalitarian cultures in which social status is less stratified or less contextually relevant. Also, in contexts of threat, cultural cognition predisposes people towards cultural-identity-protective cognition in which social signaling of solidarity to cultural position reinforces ones cultural identity (Kahan *et al.*, 2007). Thus, both “the rules about enforcing the rules behavior” (Fessler, 2007: 13) and the degree of ingroup conformity are affected by social structure,



which has an effect upon moral judgement (Fessler, 2007). Rather than mapping RWA and SDO to “factors that exist inside the individual’s head” of the MMM, instead, they more closely reflect cultural biases which either emphasize tight cultural norm enforcement to maintain intragroup conformity (RWA) or tight cultural norm enforcement to maintain intergroup dominance against outgroups (SDO). Both can then be connected to the social and emotional dynamics which are influenced by ideological messaging, especially when threat is salient, which triggers culturally protective defenses and affects social perception (Xiao *et al.*, 2016), of which the various theories rolled into the MMM clusters could address.

This study started with the Unified model offered by Bruce (2013) which sought to unify morality, religion and social interaction by integrating Moral Foundations Theory’s analytic and the Big “Three’s” Community-Autonomy-Divinity analytic with Plural Rationality Theory (PRT)’s Group Grid analytic, to create a framework for testing the effects of moral narratives upon how and why people behave influenced by political worldview and cultural biases. This study used the Unified model as basis of the Social Self Model, using Community and Autonomy as universal dimensions upon which to align analytics, while Divinity was speculated to relate to the “glue” of PRT’s cultural worldview biases. The violation of moral norms produce moral intuitions that come in the form of other-condemning emotions. Thus, a simple pairing of other-evaluative emotions to violations at each perspective for both proscriptive and prescriptive regulatory models could be made with the CAD emotions (Rozin *et al.*, 1999) to guide the way.

The CAD Hypothesis (Rozin *et al.*, 1999) posits the “Big Three” ethics of Community, Autonomy and Divinity (Shweder *et al.*, 1997) guide moral intuitions, for which judgments of moral violations produce characteristic emotions of contempt, anger, and disgust, respectively. The combined MMM (**Fig. 26.12**) provides a rich set of analytics that divide morality into motivational domains related to proscriptive and prescriptive regulation, albeit at the ontological level of the individual, so the universal dimensions of Community and Autonomy and Divinity don’t yet match this model. However, violations of MMM cell logic can distinguish the difference in CAD emotion targeting and emotion type depending upon the MMM’s regulation type (protection-provision) and perspective focus (group, other, self), respectively. This mapping of moral motivations with CAD emotions can help later to make sense of the Big “Three” ethics relations to MFT and PRT’s Group Grid. Confirmation of this conjecture could be guided through correlation with the CADS inventory (cf.

Guerra & Giner-Sorolla, 2010).

Group-focused moral violations invoke the Community ethic, where communal solidarity or responsibility obligate individuals to sacrifice individual concerns towards group benefit. However, the socio-moral contempt for violations of the Social Order targets the individual, for whom are responsible while contempt for violations of the Social Justice targets institutions and collectives.

Other-focused moral violations can be thought of at both the smallest collective level, the social dyad, as well as the highest individual level in the focus upon the other beyond the self. However, these would invoke the Autonomy ethic, as other-focus would be with respect to other's autonomy. For other-focused prohibition of restraining self-interest, a violation would produce anger towards the aggressor. Prescriptive violations, however, are cause ambiguity in general situations, as its impossible to effortfully engage altruistically towards everyone as there are limitations on energy expenditure, while situational failures to act altruistically produce disappointment.

Self-focused moral violations invoke the Autonomy ethic, where individual actions against experiencing harm elicits anger that's thought to protect against and counter moral injury. However, it would seem violations of proscription would produce different emotion reactions from observers than would violations of prescriptions. Taking the latter first, violations of prescriptive self-reliance and autonomy would produce other-directed emotions of pity, if one had positive regard for that person Fessler (1999), while disgust would be seem to be more likely if one had negative regard for them. Thus, the CAD emotion disgust seems to apply to moral violations of outgroup members.

Prohibitions generally require individuals to maintain self-control by avoiding self interest, other exploitation, or actions against group conformity. Thus, violations of prohibitions affect the purity of groups, relationships, and individuals, which the CAD hypothesis attributes to the Divinity ethics and other-evaluative emotions of socio-moral disgust. This emotion reaction to violations of "should not's" produce a binding emotion that influences avoidance from behaviors which violate the sanctity at each perspective focus. Violations of proscriptive "should not's" contaminate the purity of groups, relationships, and individuals, producing socio-moral disgust targeting the individual, which makes the ethic of purity the proscriptive "glue" which binds the sanctity of groups, relationships, and individuals.

Prescriptions, on the other hand, motivate towards expanding self-focus of interests and capabilities; other-focus of being tolerant and enhancing/helping towards others' autonomy; and group-focus of universalizing reciprocity to ensure the social collective provides for the welfare and fairness for all. The violations of prescriptive "shoulds" require reparative behaviors which provide for individuals. Each of these have in common a tolerance for rights of liberty of individuals, for rights of fairness towards all individuals, and for rights of welfare of all individuals. The emotion reaction to violations of "shoulds" produce a individualizing emotion concerning the integrity of the individual, requiring a tolerance towards individuals for their moral failings of not meeting "shoulds," making the ethic of tolerance the prescriptive "glue" which binds the sanctity of groups, relationships, and individuals.

This combined model (**Fig. 26.12**) provides analytics which could correlate moral narratives with moral emotions, satisfying the first part of Bruce's (2013) attempt at a universal model. But to integrate this combined MMM with plural rationality theory's Group-Grid requires further distinguishing moral motivations with commonly shared values that drive group behavior, thereby integrating a Social relational analytic.

When values are used to organize action towards group goals, certain behaviors are expected by the collective group working cooperatively. Such expectations are group norms, which when enforced by the group over everyone, are considered Moral Standards (Fiske 1992: 698). The norms of the most general type of group, the culture, organize around a logic which is all encompassing, larger than a worldview. These organize social action towards solving some recurrent and important goal affecting the whole of culture. Such logic has been found around the organization of Relational Models (RMs), which this study covered earlier in Relational Model Theory (RMT) (see **Fig. 4.1**).

Relational Models help to organize "the basic kinds of relationships people perceive and construct that determine the morally required response in a given situation" (Rai & Fiske, 2011: 58). Moral disagreements coming from differential application of relational models results in legitimate moral perspectives which cannot be reconciled logically (Rai & Fiske, 2011). These, each RM should correspond to a Moral Motivation, a signature judgment triggered by a positive or negative signal, having its origin in the functioning of the ANS.

RMT's four broad classes-Communal Sharing (CS), Authority Ranking (AR), Equality Matching (EM), and Market Pricing (MP)-provide “representations, grammars, or script-like social schemata” for coordinating social life, while “not fully specifying behavior,” instead provide “a set of rules which strongly constrain the possibilities and which organize responses to violations of the rules” (Fiske, 1991: 21). Interpretations of behavior trigger evaluative judgments of good or bad, which differ depending on its congruency with the RM logic used based on social relational context. Behavior which is interpreted as matching model logic is judged right and good, while behavior interpreted as incongruent with model expectations and threatening cultural logic triggers negative moral judgments, which motivates the group to punish violators. “Moral motives, judgments, sanctions, redress, emotions, and actions are embedded in social- relational models for living in groups,” and thus, produce fundamentally different moralities (Rai & Fiske, 2011). Each RM has a unifying moral motive providing the RM specific logic underlying moral judgment and guiding the logic of social norms: Unity (CS), Hierarchy (AR), Equality (EM), and Proportionality (MP) (Rai & Fiske, 2011), which added to RMT's Manifestations & Features (Fig. 4.1) yields **Fig. 26.9** below.

**Four Social Relational Models  
Manifestations & Features**

	Communal Sharing (CS)	Authority Ranking (AR)	Equality Matching (EM)	Market Pricing (MP)
Decision Making	Group Consensus	Chief Decides & Delegates	Voting	Market Mechanism
Group Organization	all pitch in without assignments	orders down a chain of command	everyone do an equal share	compensation depending on proportion
Social Influence	Conformity	Obedience	Compliance	Cost & Benefit Incentives
Social Identity	Membership in a Natural Kind	Social Rank	Co-Equal Peer	Occupation or Economic Role
Natural Selection Mechanism	Kin Selection	Dominance / Submission Adaptiveness	"Tit-for-Tat" In-Kind Reciprocity	Specialization & Commodity Exchange
Relational Structure	Equivalence Relation	Linear Ordering	Ordered Abelian Group	Archimedean Ordered Field
Measurement Scale Type	Categorical or Nominal	Ordinal	Interval	Ratio
Significance of Time	Relationships idealized as Eternal Perpetuation of Tradition	Sequential Ordering by Rank Temporal Priority to Superiors	Oscillation of Reciprocation Synchrony of Action	Calculus of Rates of Interest/Return/Pay Efficient use of Time
Relationship Marking Mode	Enactive, Kinesesthetic, Sensorimotor Rituals	Spatiotemporal Ordering	Concrete Operations	Abstract Symbolic Representation
Constitutive Media	<b>Consubstantial Assimilation</b> Birthing, Nursing, Food Sharing, Ritual Synchronization, Movement, Shared Pain	<b>Social Physics</b> Above, In Front, Earlier, Larger, More Numerous, Greater Force	<b>Concrete Operations</b> Turn taking, In-kind Reciprocation, 1:1 Correspondence, Balance, Alignment	<b>Arbitrary Signs</b> Money, Propositional Language, Writing, Numbers & Math, Digital Accounts
Motivation	Intimacy	Power	Equity	Achievement
Moral Motive	Unity	Hierarchy	Equality	Proportionality
Moral Ideology	Group Legitimization	Heteronomy	Balanced Reciprocity	Rational Legal Legitimation
Moral Judgment	everyone's suffering as one's own	obey command of elders or God	treat each person equally	everyone in proportion to deserving

**Fig. 26.13** - RMT Manifestations & Features adding Motivations -

*Sources: Fiske (1992: 694-696; 2004b)(Rai & Fiske, 2011)*

Rai & Fiske (2011) posit a social-relational morality in which “moral motives, judgments, sanctions, redress, emotions, and actions are embedded in social- relational models for living in groups” (Rai & Fiske, 2011: 59). Maintenance of social-relations occur through the evaluations of “one’s own and others’ judgments and behaviors (including speech, emotions, attitudes, and intentions) with

reference to prescriptive models for social relationships” (Rai & Fiske, 2011: 59). Moral transgressions and obligations are judged based upon internalized social-relational model logics which are triggered by situational cues “automatically” and for which disagreements about moral content can be due to using different Model logic. Social-relational context triggers categorization of a particular RM which provides the “motivational force” behind social behaviors for regulating social relationships through general moral motivation which “form the core of our moral psychology” (Rai & Fiske, 2011: 59). The motivation is built into the categorization and logic, as well as human “proclivity to related to people in these modes” for which they are “‘prepared’ and attuned to find and participate...create...and insist on” (Fiske, 1991: 195).

Affect Control Theory (ACT) posits this cultural knowledge base is “generated without need for resource-intensive cognitive processing” built into the “affective meanings of social concepts” which guide the alignment of behaviors with the affective meaning of situations...reproduce cultural norms in social interaction” (Schröder *et al.*, 2013: 3). The core control process works on the affective “data” of the system embedded in the affective meanings inherent in concepts, largely cultural in nature since most of what we know about the world is culturally transmitted rather than experienced. This cultural knowledge reflects the alignment of embodied cultural affectations in the understanding of semantic connotative meanings, for which language is the conduit for aligning cultural sentiments. However, the data of the system is constrained by the logic of the RMs, which become salient due to situational features. The enactment of social norms, then, are not merely rule following but flow out of the meanings of social concepts in which context is delineated by model logic. The RMs are like a superset of nested conceptualized concepts whose core logics are set early in development, much like the categorizations for vowel sounds, where prototypes are established through early infant-caregiver social engagement and then repeatedly reapplied by associating new experiences to the RM which best fits according to situational context.

The adherence to normative rules varies depending on the dynamics of the relations of the RMs to each other, not necessarily in the logic within the RM itself, for which any culture combines these building blocks in various combinations and in various contexts. The Tightness-Looseness construct (Gelfand *et al.*, 2006) measuring the strength of social norms and how vigilantly they are sanctioned, emerges with the Market Pricing social relational model, the abstract symbolic domain that is distinctly human (Fiske, 1992). Social norms provide a social mechanism that encourages costly

altruistic primary behaviors (expectations for forgoing self-interested actions) through lower cost secondary behaviors (sanctioning) which benefits group regulation (Sober & Wilson, 1998). Cultures vary in their degree of tightness or looseness, with both productive and unproductive models of each. Extreme tightness inhibits creativity and openness while enforcing potential inequality. Extreme looseness results in self-interest of others harming the collective or individuals through decreased social solidarity and increases social ambiguity. A healthy balance of tightness and looseness can befit harmony within the group while giving it competitive advantages with other groups.

Integrating RMT with the Model of Moral Motive & MFT is aided by RMT's moral motives of Unity (CS), Hierarchy (AR), Equality (EM), Proportionality (MP) (Rai & Fiske, 2011). Recall from **Fig. 4.2**, each of these motives correspond to general category of action in social relationships, termed Action fluxes (Favre & Sornette, 2015), that represent one of six ways action can be ordered between the dyad. Two of those action fluxes are the NULL and Asocial, which in the former's case means there is no actions between the dyad, such as two strangers passing each other on a crowded street. The latter represents the case when one actor of the dyad engages in a non-exchangeable role while the other doesn't respond.

While all RM logics are used interchangeably in constructing social relations at dyadic and group levels, it could be argued those RM logics are also operational at the Self-focus level, as subjective states as well as subjective thought are subject to social relational logic, since much of what we experience internally is motivationally related to the social world. However, RMT's moral motive may each be thematic for individual "cells" of the MMM. Additionally, the four RMs map to social action fluxes, which are signature dyadic interaction patterns of which there are only six, with ASOCIAL and NULL as the additional non-social fluxes (Favre & Sornette, 2015), providing six social relational models for six moral motive cells. While the non-social fluxes don't have necessarily have moral content per se, in some sense they assist the mapping of RMT to the MMM, with a speculative hypothesis explained below.

# Model of Moral Motives & MFT MAC SVT BUC(K)ET w/ RMT

		MORAL REGULATION	
		Proscriptive Protect / Inhibition (Avoidance)	Prescriptive Provide / Activation (Approach)
PERSPECTIVE FOCUS	GROUP FOCUS	<b>SOCIAL ORDER</b> Communal Solidarity  MFT: BINDING Loyalty, Authority  MAC: Mutualism, Deference, Heroism  SVTM: Loyalty, Obedience, Conservation, Purity  BUC(K)ET: Belonging  RMT: HIERARCHY (AR) $\begin{array}{c} X \\ A \rightleftharpoons B \\ Y \end{array} \quad \begin{array}{c} Y \\ A \rightleftharpoons B \\ X \end{array}$	<b>SOCIAL JUSTICE</b> Communal Responsibility  MFT: BINDING Welfare, Equality  MAC: Reciprocity  SVTM: Reciprocity, Elevation  BUC(K)ET: Belonging  RMT: EQUALITY (EM) $\begin{array}{c} X \\ A \rightleftharpoons B \\ X \end{array} \quad \begin{array}{c} Y \\ A \rightleftharpoons B \\ Y \end{array}$
	OTHER FOCUS	<b>CONTAIN SELF-INTEREST</b> Not Harming  MFT: INDIVIDUALIZING Harm  MAC: Kinship  SVTM: *Dominance, *Ambition  BUC(K)ET: Understanding  RMT: UNITY (CS) $[A \xrightarrow{X} B \text{ and } A \xleftarrow{Y} B]$	<b>ENABLE ALTRUISM</b> Helping / Fairness  MFT: INDIVIDUALIZING Care, Fairness  MAC: Fairness  SVTM: Tolerance  BUC(K)ET: Trusting  RMT: PROPORTIONALITY (MP) $[A \xrightarrow{X} B \text{ and } A \xleftarrow{Y} B]$
	SELF FOCUS	<b>SELF-RESTRAINT</b> Moderation  MFT: PURITY Sanctity  MAC: : N/A  SVTM: *Egocentrism, *Gratification  BUC(K)ET: Controlling  RMT: NULL $\begin{array}{c} \emptyset \\ A \rightleftharpoons B \\ \emptyset \end{array}$	<b>SELF-RELIANCE</b> Industriousness  MFT: INDEPENDENCE Liberty  MAC: Possession  SVTM: Autonomy  BUC(K)ET: Enhancing Self  RMT: ASOCIAL $A \xrightarrow{X} B$



**Fig. 26.14** - Model of Moral Motives & MFT MAC SVT BUC(K)ET w/ RMT Action Fluxes -

Sources: Janoff-Bulman & Carnes (2013: 3, Fig. 1); Haidt, Graham & Joseph (2009: 113); Schwartz (2012); Fiske (2004); Curry (2016); Rai & Fiske (2011); Favre & Sornette (2015: 7, Table 3)

Each of RMT's moral motives of Unity (CS), Hierarchy (AR), Equality (EM), Proportionality (MP) (Rai & Fiske, 2011) correspond to a particular action flux (Favre & Sornette, 2015) serving as archetypal pattern of action for a given motivation, plus the two non-social action fluxes, each of which fit the logic for exactly one of the motivational cells of the MMM. The group-focused motivational cells map to AR and EM, two forms of reciprocity (complementary and symmetrical) producing opposite patterns of normativity and distributivity. The self-focused motivational cells map to the two non-social action fluxes, as self-focused prohibitions of restraint model self-only null interactions, while prescriptions model actions taken by the self independently of other's actions, thus asocial in that no-social bond is involved as action is purely transactional, such as in the market. The other-focused motivational cells represent the interpersonal, which fit the remaining two RMT moral motives. Enabling Altruism matches proportionality in the sense of Assortive Interactions, where people find cooperative others to engage in altruistic mutual aid. Containing Self-Interest, however, doesn't seem to fit the CS motive of UNITY, which RMT clearly posits is the basis of all groups and would seem a group level focus. However, all groups are composed of interpersonal dyads, the fundamental base of social interaction, for which there is a tacit agreement to not harm each other to enable social interaction. Self-restraint from Harm is perhaps the only truly universal Moral that all cultures recognize, giving it the sense of a unifying moral from which to build all Groups. The action fluxes map a particular social relational pattern archetypes to each motivational cell,

The dynamic, then, of goals, motivations, cooperative strategies, and values acting in concert in evaluation of self and others' behaviors provide the system for systemizing norms, which can help to answer how and why moral motivations became externalized (Stanford, 2008).

*“In that they communicate something about the actor's character, social norms are a language. Complying with a social norm sends a message. Normative conformity is like conformity to the rules of grammar: it is done (albeit unknowingly) for purposes of communication. In fact, social norms are an intricate system of communication, one that*



*conveys a single yet important message: the actor's potential as a cooperative partner."*

*Druzin (2013: 261)*

Habermas' Communicative Action theory of speech claims that universal validity claims correspond to speaker perspectives with expressive intentions corresponding to subjective first person perspectives that can be judged for Truthfulness, interactive interpersonal expressive corresponding to normative second person perspectives judged for rightness or appropriateness, while cognitive propositional content can be judged for Truth claims (Habermas, 1979). These roughly match the platonic triadic realms of Beauty, Justice, and Truth (cf Wilber, 2000a). These realms correspond to the 1st person-perspective representing a subjective, expressive mode; the 2nd person-perspective representing a normative, interactive mode; and the 3rd person representing an objective, cognitive mode. However, as is clear from **Fig. 26.13**, moral motivations exist at subjective, normative, and objective perspectives, for both deontic rules against (should not) and obligatory prescriptions for (shoulds).

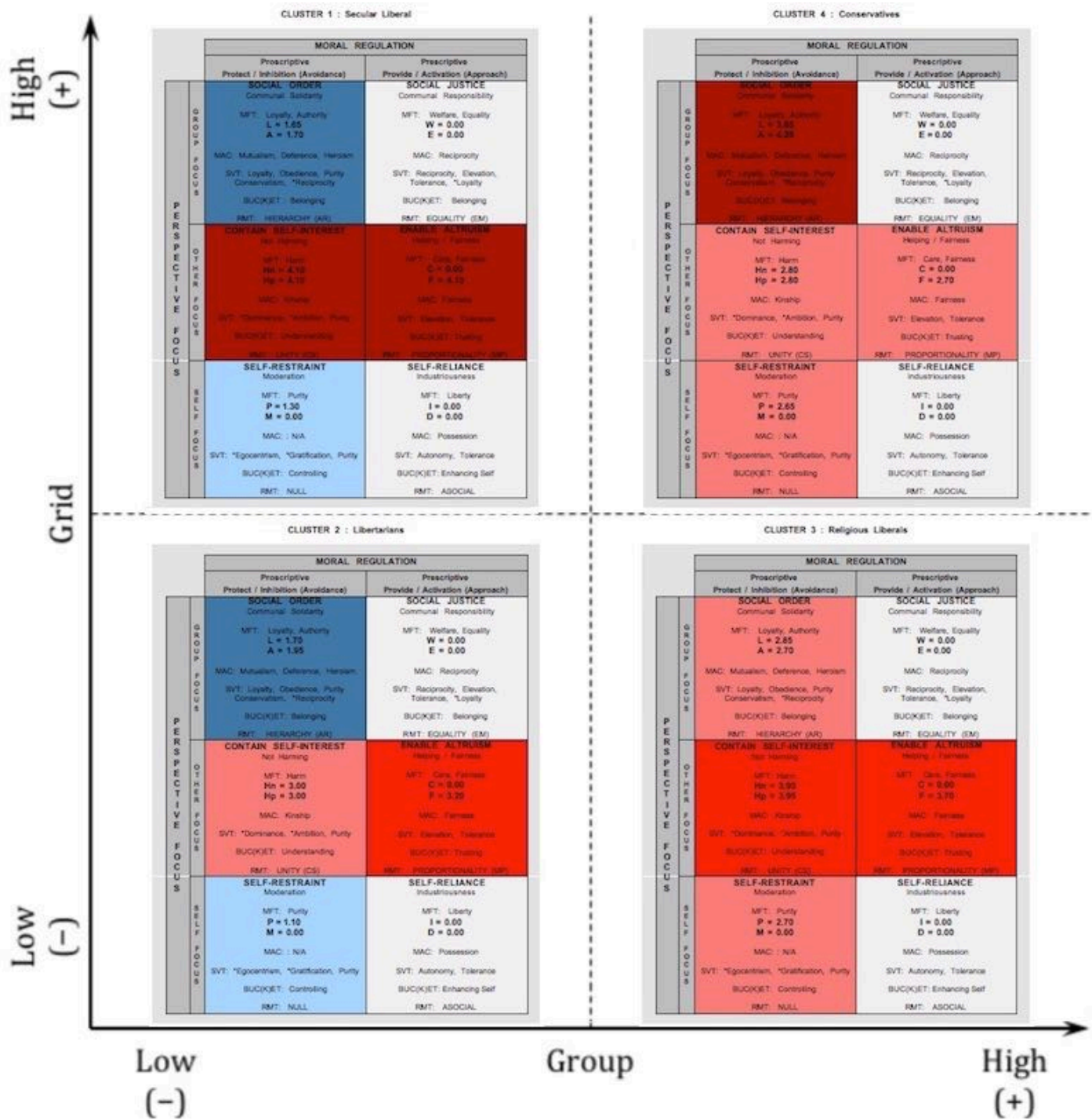
Therefore, current integral analysis of American Politics by integral theorists limiting morality to simply the objective domain end up with a model of ideology that stereotypes ideologies into false dichotomies and false polarizations. While their intention is to find the commonality of values which are shared, it artificially creates a model which emphasizes division and separateness. For instance, McIntosh (2016, 2017) offers a model of four US political worldviews aligning from political left to political right as Progressive Postmodernists, Liberal Modernists, Fiscally Conservative Modernists, and Socially Conservative Traditionalists. These worldviews are then stereotyped to be centered on moral values of Caring, Fairness, Liberty, and Heritage respectively (McIntosh, 2017), clearly in reference the Moral Foundations Theory's typification of moral focus for its four ideological clusters, Religious Liberals, Secular Liberals, Libertarians, and Social Conservatives respectively. This, however, does not match the evidence provided by the composite model of moral motivations offered by this study, which takes into account the role of affect regulation, social relational models, and cooperative evolutionary strategies. The integral account of ideology McIntosh (2016, 2017) essentially bakes in polarization and division due to the oversimplification of political ideology to individual "exemplar" moral foundations which map 1-1 with ideology.

*"a relational model is attached to a relationship between two actors (that can be persons or*

*groups), whereas a cultural bias emerges from a larger pattern of social relationships. By larger pattern, we mean a set of nodes (actors) and links (social ties), as in graph or network theory.” Favre & Sornette (2016: 14)*

This study has shown the coherence of different theories of morality by integrating them with the Model of Moral Motivations, taking morality as a regulatory activity occurring at self-, other- and group-focuses. Mapping MFT’s moral foundations to these MMM cells allows for a rough measure of the valuation for different focuses over proscriptive or prescriptive regulation at a cultural level, as measured by the clusters found of foundation valuations according to political ideology. Now, aided by mapping of RMT’s social relational models and MAC’s game theoretic evolutionary solutions, the heatmaps of **Fig. 26.4** begin to offer more than showing that there *are* differences in values, but in the patter of difference across the constellation weighting of social relational logic and of cooperative strategies. Expanding MFT to include the sixth foundation of liberty, as well as a social justice group “binding” foundation, could lead to a better understanding of “how and why people behave as they do” (Bruce, 2013: 44).

This study makes the prediction that a fully measured cluster analysis of these two additional “foundations” would lead not only to a better understanding of the differences between US political Conservative, Secular Liberal, Libertarian and Religious Liberal clusters, but more generally, a universal model of cultural moral ideology that could help to disambiguate much of the political mis-categorization and mudslinging in the labeling of ideological “others.” For, these MMM heatmaps, combining the MMM with MFT, MAC, SVT. & RMT can connect the micro to the macro, revealing a model for which Bruce (2013) was seeking in a coherent universal integration of Moral Foundations Theory with Plural Rationalist Theory (Grid-Group) and the Big Three ethics, as shown by the figure below:



**Fig. 26.15** - PRT Configuration of Model of Moral Motives Cluster Heatmaps -  
Sources: Haidt, Graham & Joseph (2009: 113); Bruce (2013: 45, Fig. 3)

Plural Rationality Theory posits that people use cultural biases in contextualized ways to make sense of social structure for how society should best be structured. Bruce (2013) posited that Moral Foundations Theory and the Big "Three" Ethics could be mapped to PRT's cultural bias typology to provide empirical support for understanding what motivates people to behave in the ways they do.

**Fig. 26.14** shows Bruce's unified model (Bruce, 2013: Fig. 3, 45) using Grid-Group as the basic model with MFT's Cluster Heatmaps placed in the PRT's corresponding Hierarchy, Egalitarian, Fatalist, and Individualist worldview biases. Bruce proposed Community corresponds to the Group orientation while Autonomy corresponds to the inverse of Grid, with high Grid mapping to low Autonomy and vice versa. Thus, the MMM Cluster Heatmaps of **Fig. 26.4** applied to **Fig. 26.13** to also include the additional Morality-As-Cooperation, Relational Models Theory and Schwartz Value Motivations analytics.

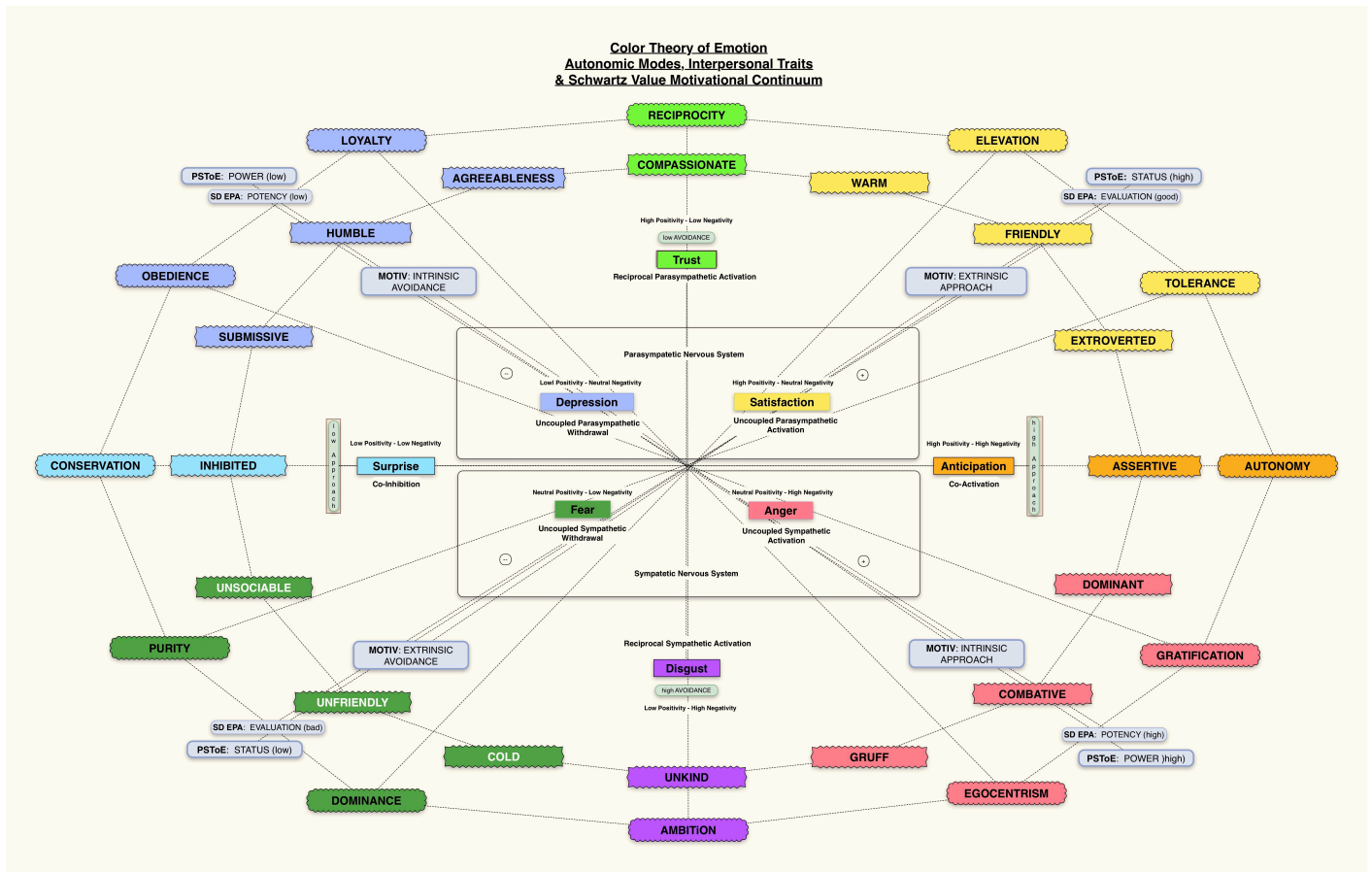
This cultural tightness-looseness dynamic corresponds with the Vertical-Horizontal dimension of the Horizontal and Vertical Individualism and Collectivism (Triandis & Gelfand, 1998), with the Collectivism - Individualism dimension running from high Community to low Community. Thus, PRT, HVIC and the MMM Clusters combined would map Conservatism with Vertical Collectivism - Hierarchist, Secular Liberalism with Vertical Individualism - Fatalist, Libertarian with Horizontal Individualism - Individualist, and Religious Liberals with Horizontal Collectivism - Egalitarianism quadrants. This would place high Grid/Tightness on the left (Conservatives and Secular Liberals) and low Grid/Looseness on the right (Libertarians and Religious Liberals).

However, Bruce (2013), who offered the Universal model that began this study, points out that the mapping of PRT's Fatalist with Secular Liberalism is tenuous, requiring "further work is necessary to clarify the relationship between them" since PRT "describes fatalists as subject to all the negative phenomena Secular Liberals worry about...rather than the lived experiences of Secular Liberals themselves" (Bruce, 2013: 44). Furthermore, the correspondence of Schwartz Value Theory's Self-Enhancement values quadrant shares concerns with Security and Power with Conservatism doesn't seem to fit the Secular Liberals valuation cluster, albeit, with two of the six motivation cells not yet measured. It may be those additional moral motivation/foundations would lead to finding a fifth cluster through factor analysis, one which would share a fatalist worldview and similarities to moral foundation valuations, but differentiated by the unmeasured focus on the self-reliance dimension. Furthermore, a significant portion of the American electorate is non-political (O'Gorman, 1975), both abstaining from voting and party identification, of which PRT's fatalist worldview predicts, identifying a hidden population that may also be absent from traditional testing methods, a product of distrust or non-involvement with institutions.

Typical Integral models of US political worldviews incorrectly cast Progressive Postmodernists as the smallest, politically left most grouping within the American polity, whereas its analogue to the MMM and PRT, named by MFT as the Religious Liberal, is mainly ignored by MFT studies. This worldview cluster shows the greatest balance of “moral tastebuds” according to five moral foundations in the Cluster Analysis, as well as the largest sample size (Haidt, Graham & Joseph, 2009). From a purely intuitive view, the Social Justice moral motivation would figure to be most valued by this “hidden” cluster, one which directly challenges the Social Order supported by the Establishment.

Further study of moral foundations of cultural worldviews, particularly US ideological worldviews, must reconcile with the composite moral model (**Fig. 26.14**) offered by this study, which may be enlightened by the study of Power and Status and of affect regulation. While the arguments of whether binding dimensions are truly moral may be debatable, philosophical arguments that morality is “irreducibly a second person phenomenon” (Darwall, 2009) agrees with the moral theories included in the combined Model of Moral Motivations, something that wisdom traditions have taught for ages and for which is even discernible in primate studies. However, the moral logics of ideological worldviews may offer generalized moral identities which is theorized to be a principle level identity (Stets & Carter, 2014).

Finally, the orientation of the Combined MMM (**Fig. 26.14**) with respect to autonomic functioning can be seen through the shared correspondence between traits and values. Schwartz Value Theory’s Motivational Continuum (**Fig. 26.10**) provides the connecting piece between the motivational regulation by culture and the social system balanced by the individual personality system. It can be mapped to the Social Self Map, which itself can be considered a radex model combining simplex and circumplex models with a 2-D representation of 3-D autonomic functioning, which altogether produce the Social Emotional Motivational Semantic plane. The analytics across multiple levels and multiple disciplines, from the cultural down to the neurophysiological, connecting macro to micro, can be constructed from the relationships between their “taxonomies” represented from the synthesis of **Fig. 26.15** the figure below:



**Fig. 26.16** - Social Self Mapping of Autonomic Modes with Semantic Personality Traits & SVT Motivational Continua

**Fig. 26.16** shows the Social Self Model with Autonomic modes (**Fig. 24.8**) adding an outer circular motivational continua of Schwartz's theory of universal motivation themes (**Fig. 26.10**). Schwartz's (2012) theory of basic values, in extensive cross-cultural testing, have been found to be culturally universal "motivationally distinct types of value," that according to Fiske (1991) are goals widely shared. They represent competing motivations within individuals, institutions, and societies having properties of adjacency similarity and opposite repulsion, much like trait analysis.

## CHAPTER TWENTY-SEVEN

### Development & Emotion

*“People can acquire explicit propositional knowledge about right and wrong in adulthood, but it is primarily through participation in custom complexes involving sensory, motor, and other forms of implicit knowledge, that are shared with one’s peers during the sensitive period of late childhood and adolescence that one comes to feel, physically and emotionally, the self-evident truth of moral propositions.” Haidt (2001: 21-22)*

Morality as Cooperation (Curry, 2016) posits that legitimately evolved cooperative strategies as solutions to social game theory represent the atoms of morality, the basic moral building blocks that may be mixed and matched to produce a combinatorial system from which complex social patterns of interaction are composed (Curry et al., 2021). Haidt (2011) instead offers more of a trait theory of moral intuitions, offering moral foundations akin to moral tastebuds from which judgments appear quickly and subconsciously. This study proposed an integration of both MAC and MFT the Model of Moral Motivations (Janoff-Bulman & Carnes, 2013) to the MMM’s motivation cells defined by crossing of dimensions of person perspective and regulation strategy. The MMM framework also allows for the integration of motivations related to Relational Model Theory (Fiske, 1991) via the MMM cells’ correspondence with RMT’s six general patterns of action/communication between actors (Favre & Sornette, 2015) used combinatorially in all social actions by all actors. Each of these are theories of constrained relativism, both structuring and limiting the seemingly unlimited variation of motivations and behaviors to a well ordered, describable system.

Their coherence in the combined MMM model becomes more clear when considering that choosing assortive interactions with suitable others is constrained by social cognition, where the judgment of the potential cooperativeness of individuals and groups are perceived as dimensions of warmth and competence (Fiske et al., 2007). The combined MMM differentiates between motivations from three fundamental perspective focuses, those focused upon the Self, Other, and the Group across motivational dimensions of either prohibitions to avoid certain types of actions or prescriptions for

approaching other types of actions to attain goals.

This study contends that an individual's bias towards one MMM motivational cell or cells over others originates not from Cultural values, social structure, or biological functioning, but a psychological control system meant to protect from harm. Traumas experienced in the past, especially during childhood, influence harm avoidance indicated by anxieties from unconscious anticipation of re-experiencing the trauma, leading to avoidance of situations which may present the same danger of trauma (Bush & Gassner, 1988). This creates an unconscious bias towards pathogenic beliefs sourced from false causal explanations meant to explain that individual's behavior as the causal agent of the trauma (Bush & Gassner, 1988). Thus, unconscious control systems steer one towards motivation cells which protect one from similar situations in an attempt to assert "some control over their unconscious mental life" (Bush & Gassner, 1988: 231). It is in light of this emotional-cognitive-behavioral dynamic that individuals constrain their own motivations, values, and beliefs as strategies of unconscious emotion management.

From a behavioral learning perspective, this aligns with the Two-Factor Theory (Mowrer, 1960) which posits that responses of avoidance through fear that may have been learned from a neutral conditioned stimuli itself represents operant negative reinforcement in the form of relief from the removal of feared threat through the absence of the neutral CS, an example of reinforcement by consequences (Buck, 2010). While such a response may be maladaptive, especially in situations that complete avoidance removes any chance of "reality testing" which could counter the fear belief (Buck, 2010), it can also be seen as an adaptive response in the context of relieving stress.

While this insight originates with the psychoanalytic theories of Freud (Bush & Gassner, 1988) and the Two-Factor Theory in the behavioral sciences, therapeutic interventions from these two disciplines have been shown to have efficacious effects upon different aspects of psychopathologies. However, their efficacy differ depending upon the target behavioral maladaptation.

Cognitive Behavioral Therapy (CBT) is shown to be effective in reducing undesirable cognitive and emotional responses in situations involving risk (Vaske et al., 2011). CBT focuses upon changing cognitive appraisals of stimuli which trigger threat reactivity towards less threatening representations to avoid maladaptive responses such as panic attacks (Wilson et al., 2014). CBT



helps to enhance social skills, coping skills, and problem-solving & decision making which has direct effects upon both the functionality and structure of the neurophysiological systems involved (Vaske et al., 2011).

Mindfulness Based Interventions (MBIs) have been shown to helping to overcome emotion dysregulation thought to underlie behavioral disorders (Guendelman et al., 2017). MBIs can help individuals to harness attentional control, overcome emotion dysregulation, and enhance self-reflective reasoning, especially those based in the cognitive behavioral therapy (CBT) family. Cognitive behavioral MBIs have been found to positively alter both the function and structure of those neural systems which implement the Social Emotional system (Guendelman et al., 2017). Cognitive behavioral MBIs accomplish this by not eliminating maladaptive thoughts and feelings, but in using situational context and learning processes to help reframe and re-conceptualize thoughts and feelings through mindful techniques (Wilson et al., 2014). Cognitive behavioral MBIs can be seen to represent multidimensional multilevel evolutionary process (Hayes & Sanford, 2015).

Variants of cognitive behavioral MBI's have been shown to be efficacious for other types of disorders, such as Training for Awareness, Resilience, and Action (TARA) to combat Major Depressive Disorder (MDD) (Blom et al., 2014), Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) to combat anxiety and depressive disorders, Dialectical Behavior Therapy to treat Borderline Personality Disorder (BPD) and substance abuse (Guendelman et al., 2017). So too have Psychodynamic psychotherapies have been shown to have equal or greater efficacy than CBT's (Shedler, 2010).

But how, exactly, in terms of neurophysiological and psychological theories, do CBT or Psychodynamic psychotherapies, or social verbal behavior for that matter, produce changes to behavior, not simply through such concepts as learning (which is another explanatory framework of Behavioral analysis and operant conditioning). Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) seems to come the closest to offering several sets of verbal operants through which relational responses are conditioned, and whose family of operants scaffold more and more complex relational inferential abilities that make complex social behavior possible through symbolic referential communication. But how exactly do RFT's operants persist in the brain, as patterns of information stored in memory or physical substrates or synaptic networks? RFT offers a compelling

theory with its advanced verbal operants resembling to the building blocks of Social Relational Models (Fiske, 1991) which order social interaction.

Certainly, verbal operants are involved in the social cognition of behavior. How social cognition is accomplished neurophysiologically is debated, with several theories competing to explain it as through Theory of Mind ('theory theory' (TT)), representational simulation (simulation theory (ST)) or part of intersubjective interaction (interaction theory (IT)). Variants include strong and weak versions of TT and ST, a combined TT and ST version, while IT challenges TT and ST as later stages from an IT default (cf Gallagher 2008). Seen generally, TT proposes social understanding occurs via cognitive representation using the conceptual mentalizing network from a third-person observational perspective. ST characterizes simulation as occurring via the the mirror resonance system simply activating our own motor system when observing another's social action, again from a third-person observational perspective, although via a first-person feeling from simulation rather than through inference. IT counters the others by positing that social cognition of intention and emotion are directly via a second-person perspective through "everyday interaction." TT, ST, and IT are feeling around the elephant by considering one person perspective dominant over the others, while an integral account would account for all three perspectives.

This study posits these correspond to different functional psychological primitives of Categorization, Controlled Attention, and Core Affect (Barrett, 2011), which represent large scale brain systems coordinated over a shared functional space through the affective dimensions of semantic meaning. But what would a complete theory of how, exactly, would these work from perception of a verbal operant through neurophysiological processing and autonomic adjusting? And how would a complete theory show the integration of cognition, affect, and attention through the processing of symbolic information exchanged through verbal stimuli? This seems to be related to the hard problem of consciousness (Chalmers, 1995) in that through semantic meaning systems, how exactly does the rubber of symbolic information meets the road of neurobiological systems?

It seems to have become clear that the core neurophysiological system described throughout this study somehow transforms symbolically referenced information into some internal information system which regulates internal processing implemented in synapses, neurotransmitters, brain systems, etc. This symbolic information makes possible the potential to explicitly override implicit,

subconscious action systems through the coordinated in processing motivation, emotion, and cognition/decision making, which can be disrupted by prior experiences and defaulting to implicit systems, despite intentions to consciously act differently.

A speculative hypothesis of this study, of which there have been many since its inception, but for which now is becoming readily apparent, is that the EPA dimensions of affect are used by the neural system to compute next states. While Affect Control Theory offers an impressive mathematized model of symbolic interaction based upon the affective dimensions of connotative meaning that is predictive of behavior, it was constructed through reverse engineering in the brilliant insight of EPA dimensions as units of computation in complex equations that mirror the semantic components of action frames (subject, verbs, adjectives, etc), whose equations were fine tuned to define precise coefficients for action components which result in the equations successful computation and transformation of inputs to meaningful semantic outputs. Impressive correspondence with psychological theories have been shown through insights of Affect Control Theory's model dynamics and simulated results (MacKinnon & Heise, 2010).

Does this implicate some analogous computational system in brains mirroring such equations, or more probably, is there some other computational system implemented to operate the control systems of behavior?

This study offers a hypothesis of the theoretical operation of EPA to neurophysiological computation systems can be explained through RFT's verbal operants corresponding to physical structures which implement transformations on various aspects of social relational "data" by providing inference like operations which are related hierarchically to control systems designed to set predictive states towards which to target behavior. The physical structures corresponding to relational frame operants are the Von Economo Neurons (VENs) wiring Prefrontal (cognition-decision making), ACC (motivation-action) and AIC (emotion) cortical controls, creating specialized high speed circuits specifically to process various types of social referential inferences which are used in the construction of Situated Conceptualizations (Barsalou, 2015) or Relational Frames (Goffman, 1974), or whatever framework for modeling simulations of social frames and action. These wire the large scale functional systems that produce a 3-D affective functional space over which symbolic information is located.

Two types of relational frame circuits are offered. The first are implicit circuits corresponding to EFT's non-arbitrary relational responding (NARR), hypothetically those VENS directly processing physical stimuli initially wired prenatally or soon after during very early ontogeny (0-5 mo), for which humans are born with many more VENS than other social mammals. Circuits corresponding to arbitrary applicable relational responding (AARR) would hypothetically be those VENS which wire ontogenically from the "beginning" of language, but likely seamlessly through infancy as verbal operants from caregivers coordinating emotion, motivation, and cognition. Such a paradigm of EFT's verbal operants corresponding with neurophysiological connections wiring the cortical brain regions crucial for extrinsic, "conscious" control in social relational contexts would provide a "reason" for which the spindle-neuron networks grow and wire during language development, and through which complex inferential logic is implemented through experience to seamlessly process verbally (or across other modalities in which affective information is transmitted non-verbally).

This hypothesis could offer a new dimension over which development could be more explicitly measured empirically and for which could provide a bases for new stage theories of development. The advanced capabilities of deliberative reasoning must somehow be implemented neurophysiologically, and an account of VEN networks integrating emotion, motivation, and cognition would go a long way towards working out the dynamics of large scale brain systems engaged in reasoning and judgment. The automatic moral judgments that come implicitly from observing behavior could then be seen as the activation of different combinations of relational operant VENS contributing inputs from various different AARRs which yield implicit judgments that explain the differentiation of moral judgments at the level of MAC's Moral Molecules theory (Curry, 2019a). Thus, context may indicate several salient cooperative strategies which recruit their corresponding VEN to contribute to an evaluative computation that makes sense in the context of that social pattern. An individual viewing behavior in the context of a held worldview like Authority Ranking would have strengthened AARRs for HIERARCHY, which theoretically would correspond to VENS for detecting hierarchy in social behavior, which then contribute a stronger element of the overall evaluative input towards the almost instantaneous implicit moral judgment. Complex social situations would require deliberate, effortful processing and the weighing of inputs that come to mind separately and held in working memory, a limited resource held variably in the population resulting in differential abilities of reason.

Returning to the Moral Foundations which ground symbolic judgment, MFT was offered by Haidt to move beyond the dominant paradigm in Moral Psychology, Kohlberg's Stage model of Moral Development (Kohlberg, 1981), which progressively measures the deliberative moral reasoning of children longitudinally across ontogeny, offering graded stages of deliberative moral reasoning that emerges during childhood through adolescence and into adulthood in a predictable and monotonic sequence. Haidt, however, characterizes Kohlberg's developmental model as a deliberative rationalist account, "questioning the causal role of reflective, conscious reasoning" (Haidt, 2001: 5). Kohlberg's model seems to represent the emergence of SIM's sixth stage of reflective moral reasoning (Haidt, 2001), where each stage of Kohlberg's model reflects cognitive mechanisms of semantic understanding of morality, "involving conscious, language based thinking" (Haidt 2001:4) built atop an implicit moral judgmental process, reflecting measurement of linguistic and narrative competency rather than moral reasoning.

Moral Foundations Theory emerged from an effort to elucidate the basic building blocks of intuitive moral judgments that arrive automatically in the mind like perception rather than the slower, more costly self-reflective moral reasoning requiring cognitive effort and energy. Intuitions versus self-reflective reasoning are different steps in Social Intuitionist Model (SIM) (**Fig. 22.4**), representing vastly different processes and cognitive abilities. In the quotes at the start of this chapter, Haidt posits the explicit propositional knowledge of morality, which includes cultural knowledge about beliefs, values, moral standards, and group ideology occurs through learning processes after childhood, while basic moral judgments which feel intuitively right or wrong are imprinted earlier in ontogeny during socialization with peers in late childhood and early adolescence, roughly around ages 6-12.

Haidt's (2001) critique of Kohlberg's model asserts that test subjects produce *post hoc* reasoning reinforcing innate judgments which appear as intuitions. The verbal explanations given during data collection for Kohlberg's studies represent imprecise cognitive mechanisms trying to explain unconscious implicitly generated intuitions. Moral reasoning is highly influenced by worldview, in that it too is shaped unconsciously by culture serving largely as a form of argument reinforcing one's implicit judgment, i.e. motivated reasoning (Mercier & Sperber, 2011). Conscious reflective moral reasoning occurs with cognitive effort, requiring time and mental resources to correct initial implicit

judgment to achieve an objective reflective perspective. Moreover, that form of reflective reasoning continues to work with implicit intuitions. Consciously thinking about social interaction with other persons generates new intuitions. The development of additional perspectives which aid in creating new intuitions that can then be consciously reflected upon.

Since Moral Foundations are correlational, they cannot be located in developmental theories without further theoretical and empirical work (Kovaleva et al., 2012). MFT was launched to expand upon earlier theory within Moral Psychology, Kohlberg's (1971) Six Stage Model of Moral Development, which found that Fairness, and eventually Care, to be *the* two Moral universals. MFT six foundations expanded upon these two foundations by also including foundations found in other cultures, those not necessarily mainstream western and not necessarily focused upon individuals but instead upon the group. While MFT does not offer a developmental model, Kohlberg's stage model provides a standardized model of development in the psychological literature that can be useful for centering affect and emotion in primarily cognitive models of development.

However, what exactly causes the differences between moral foundations that result in differing implicit moral judgments? Do they emanate from innate moral circuits or are they purely cultural rules which become internalized? And where and how do these foundations emerge during development? How can they be reconciled with the Combined Model of Moral Motivations (**Fig. 26.16**) containing analytics ranging from basic moral motivations to moral intuitions to moral logics to social relational logics to values underlying beliefs? How can traditional developmental stage theories be integrated with a moral motivations model and emotion theory tied to neurophysiological, psychological, social and cultural analytics?

Kohlberg's stage theory builds upon Piaget's (1932) childhood cognitive developmental theory, proposing six sequential, progressive stages of moral reasoning that reflect cognitive development and the child's expanded use of taking enlarged social perspectives of Ego and Others. The Six Stage Model posits three successive levels of two stages each-Preconventional, Conventional and Postconventional-which trace the evolution of moral thinking from an externally mediated cultural standard to one internalized by the child, to one ending with a universal standard. Kohlberg tested this model by investigating the moral reasoning used by children during different periods in childhood, requiring them to explain their thought for different moral dilemmas. By observing the

reasoning children used at various times in their life, Kohlberg could determine the level of and stage at which their cognitive development had progressed, establishing a distinct patterning of successive stages along roughly stable ages over which these emerge.

### Kohlberg's Stages of Moral Development

Levels	Stage	Stages of Motivation	Cognitive Prerequisite	Social Perspective	Focus
Preconventional (3-7 years-old)	1	Obedience & Punishment	Egoistic	Blind Egoism	Individual
	2	Self-Interest	Individualistic	Instrumental Egoism	Individual
Conventional (8-13 years-old)	3	Interpersonal Accord & Conformity	Group Cohesion	Social Relational	Group
	4	Authority & Social Order Obedience	Group Coordination	Social Sanctions	Group
Transition	4.5	Can See Other Perspectives		Communities	
Postconventional (adulthood)	5	Social Contract	Multiple Perspectives at Once	Contractual Perspective	Universal
	6	Universal Ethical Principles	Integral Perspective	Mutual Respect	Universal

**Fig. 27.1** - Stages of Moral Development - *Source: Kohlberg (1981)*

Other developmental models (e.g., Piaget) detail an initial sensorimotor stage during infancy, not specified in Kohlberg's stage model, when the infant undergoes attachment to caregiver(s) through post-natal development of the social engagement system (Schoe, 2001). Expectations emerge during early development as part of the attachment process- "children derive a set of expectations about their own relationship capacities and about other people's resources to their social overtures and interactions, these expectations being created on the basis of their early parent-child attachments" (Rutter, 1987 in Schoe, 2000: 32). However, Kohlberg's model captures the process of moral reasoning expressed through language, clearly not testable until the emergence of language, and much research has shown that infants are undergoing rapid cognitive development through the first few years of pre-verbal life (Trevvarthen, 1979). A (o) Prelinguistic Stage during the sensorimotor stage, occurring before Kohlberg's initial stage 1 in **Fig. 27.1.**, may require evaluation within any developmental theory of moral regulation given moral intuitions, which while Haidt attributes them to

Additionally, Kohlberg's model characterizes several levels of clear differences in moral development. Beginning around age three through age seven, during what's termed the (1) Preconventional Level, young children begin the process of externalizing behavior towards placating individual need, first

learning to avoid punishment, the first stage. Morals are seen to be a fixed set of invariant rules by an external authority (i.e., parents, teachers) affecting only the self (egocentric first-person perspective). Gradually, the child sees these rules as varying depending on whom is in authority, recognizing that various viewpoints are relative and individuals are free to pursue their own self-interests (instrumental egoistic first-person perspective). At this point the child's view of punishment and rewards are tied to risk of getting caught rather than an ultimate standard that must be followed (second stage).

During adolescence (8-13 years old), the child achieves the (2) Conventional Level where social relational rules for good relationships are internalized and integrated with the needs of the individual. The child's viewpoint expands to see expectations of groups (family, community) require the child to value good behavior over bad (i.e., kindness, generosity & love vs. selfishness, greed & spite). At this point their moral thinking reflects second-person perspective taking representing the concern for others within one's close relationships (third stage). As the child's perspective gradually becomes generalized by taking the perspective of society as a whole, the child comes to see the need for obeying rules and regulations to maintain good behavior generally, to uphold the social order (fourth stage).

By adulthood, the individual may achieve the (3) Postconventional Level in a transition to an even wider perspective and reflective of moral reasoning based on individual equality and reciprocity. Moral reasoning at this stage is able to discern differences in moral standards between groups within society and to abstract moral standards which ought to be met, by viewing Ego's actions from a third-person perspectives (fifth stage). These become abstract standards to live up to and to uphold in society (fourth person perspective). A sixth stage represents adopting these universal principles to achieve justice, respecting the lives and dignity of all with universal human rights. At this stage, a universal justice requires one to oppose rules and regulations which may cause hurt to others, including engaging in civil disobedience to challenge unjust laws favoring one group over another. This stage is virtually unobserved in test settings and debates on whether it amounts to an actual psychological or philosophical stage remain.

Gilligan (1982) critiqued Kohlberg's model for its original singular focus upon the moral dimension of Justice, or rules and rights, which was shown to be biased towards the male perspective, especially



true since only boys were tested initially. Once girls were included as test subjects, they were often rated at the third stage, despite the ability to engage in complex moral reasoning as boys, although using a moral reasoning focused on the ethics of care, compassion, relationship and responsibility rather than rules and rights (Gilligan, 1982). Gilligan's critique of Kohlberg's theory, and its lack of recognizing Care as a moral dimension, exposed how women must transition to a moral world dominated by male-centric morals after adolescence, which requires them to live according to two standards, an externally applied standard with rules contradicting their internally oriented standard coming from a place of care (Gilligan, 1982). This double standard forces a life geared towards individualism, hierarchy, work, and identity rather than interdependence, network, relationship, and intimacy (Gilligan, 1982). Moreover, this double standard has deprived women the ability of choice and forced them to traditionally "defer to the judgment of men, although often intimating a sensibility of their own which is at variance with that judgment" (Gilligan, 1982: 69). Women must struggle through conflicting standards of human development that hold "the role of separation as it defines and empowers the self," versus "the ongoing process of attachment that creates and sustains the human community," where "silencing the narrative of women in adult development distorts the conception of its stages and sequence" (Gilligan, 1982: 156).

*"The elusive mystery of women's development lies in its recognition of the continuing importance of attachment in the human life cycle. Women's place in man's life cycle is to protect this recognition while the developmental litany intones the celebration of separation, autonomy, individuation, and natural rights." Gilligan (1982: 23)*

Gilligan collaborated with Kohlberg to create a model of moral development centered on a Care-based ethic, which too has Preconventional, Conventional, and Postconventional levels of development, during which the focus of care grows from **egocentric** perspective, to one of **group care**, to a **universal care**. These are theorized as the same general stages males traverse as they lose egocentricity, only that male socialized ethics focus more on justice and rights rather than care (Gilligan, 1982). The male ethic too can follow the same path of expanding from egocentric, to group-centric, to world-centric ethical focus. Wilber (2000b) characterizes another level above universal or world-centric termed integrated, one that integrates both ethics beyond world-centric to universal ethical focus.

While moral psychology settled upon Justice and Care as its primary focus, comparative cultural studies particularly by Shweder et al. (1997) found that non-western societies oriented towards Collective moral domains centered upon regulating the group, which Haidt and colleagues used as a basis for including Group binding moral foundations of Loyalty, Obedience, and Purity (Graham et al., 2012). MFT's expansion of traditional moral psychology focus to account for moral intuitions not found in largely western academic test settings highlights a largely invisible ethnocentric bias plaguing much scientific research in the Behavioral Sciences, which has been dominated by American and Western European studies using test subjects from societies that are Western, Educated, Industrialized, Rich and Democratic (WEIRD) (Henrich, Heine, & Norenzayan, 2010). A WEIRD bias, with respect to moral psychology, could possibly neglect other cultural moral orientations towards group, institutions, tradition, religion, divinity not typical in the largely individualized modern western culture (Graham et al., 2012: 16).

WEIRD populations represent only 5% of the world's population, which may introduce bias into studies limited to WEIRD subjects considering their "frequent outlier" status across measures of human variability, as compared to the other 95% of the world's population (Arnett, 2008). The domains studied by Psychology are largely conducted in the US against undergraduates between the ages of 18-22, and together with participant pools from European and other English speaking populations combined to account for over 90% of the test subjects, for example, "for all of the articles published in *Child Development*, *Developmental Psychology*, and *Developmental Science* (journals) between 2006 and 2010" (Nielsen et al., 2017: 34). The persistent WEIRD sampling bias in Psychological Developmental studies (Nielsen et al., 2017) and Psychology as a whole (Arnett, 2008), obviates the necessity for any universal developmental theory to take account of how culture scripts of "how to be" influence symbolic thought, moral reasoning systems and ultimately behavior.

One certain universal is the general concept of Allostasis, i.e. the brain processes use of anticipation to meeting the needs for a given situation, serves as the organizing principle, from an evolutionary standpoint, of development at every level, with affect regulation being the underlying medium in which all regulation is mediated. Allostasis is the process of the brain's modeling of the internal and external situation for anticipating physiological resource allocation in an environment of competing needs at the time they are required through borrowing from less important systems. Allostasis provides a guiding principle which can scale to multiple brains and group processes. Seen in this

sense, cultural level forces upon individuals through verbal behavior affect the interpretation of situation, selecting between various group based needs composed of the collective of individual needs. A developmental stage theory must account for cultural level forces upon which allostatic processes can help to elucidate.

The Model of Moral Motivations and the subsequent combined model integrating analytics from various theories of cooperative strategies, value motivations, and social relational patterns (**Fig. 26.15**), when viewed generally from the perspective of affect regulation, provides a model of an individual's regulated motivations and underlying affects, which could be analyzed at various levels during development to provide an integral account of social, emotion, and cognitive development. Especially pertinent would be the temporal emergence and integration of subjective, intersubjective, and objective motivations, as well as complex integrative functioning of the underlying three functional psychological systems or psychological primitives (Barrett, 2016) this study posits underlies the EPA affective dimensions of connotative semantic space (**Fig. 24.6**).

This study proposes a developmental stage theory of affect regulation as the basis for all developmental stage theories, using a generalized model of affect regulation similar to the MMM form. Additionally, development must be measured not starting with language, but potentially prenatally through the prelinguistic, preconventional, conventional, and postconventional levels, which this study will contend represents the maturation of affect control systems integrating primary, secondary, tertiary, and above affect systems. Analogous to the three levels of MindBrain (**Fig. 9.4**) hierarchic control systems, the maturation and integration of hierarchic affect systems can provide the measure of development through measures occurring at various levels of analysis, from neurophysiological, psychological, social, and cultural perspectives using different methodologies and apparatuses to confirm the validity of Consilience.

Three types of affects emerge during human development in an ordered hierarchic sequence, as tertiary affects must wait until secondary affective control systems wire and mature. Likewise, secondary affect systems are dependent upon the maturation of the primary affect system. This study posits that any theory of development must include affect as central rather than only focusing upon cognitive systems, and that affect is created and processed through three primary controls systems, of which develop in stages through physiological maturation guided by caregivers, peers,

and social processes. Thus, there should be three developmental stage theories, the earliest detailing the emergence of the primary affect control system, beginning prenatally through the critical approximately first year and a half, resulting in primary affective expression and the primary emotions. Then a secondary affect control system emerges during the second through early adolescence during language emergence and the inculcation of social relational patterns and the processing of first-order social emotions. Then, a tertiary affect system emerges from secondary emotions from primary emotions, self-referent emotions from other's emotion referring back to the self, which begins during adolescence and ongoing into adulthood.

Greenspan & Shanker (2004) offer a theory identifying key emotional and social milestones from infancy through adulthood in which affect and emotion are at the heart of the symbolic world and of cognitive development. The development of social signaling allows the toddler to "separate perception from action," meaning automated innate reactions to things in the world (i.e., food, the caretaker, any stimulus) are tempered by the desire to communicate with others in long affective sequences. This creates an image of the stimulus less tied to action or some innate response, instead "acquiring meaning and becoming a symbol" which Greenspan & Shanker (2004: 38) theorize, provides the basis for symbolic reference in which the symbolic is abstracted and separated from an indexical or iconic physical reference (Deacon, 1997). Additionally, social signaling, emotion and affect are essential to understanding cognitive development, for they provide the basis for symbol formation, allowing for language, problem solving, and higher-level self-reflective thinking (Greenspan & Shanker, 2004: 39).

Sensations from stimuli are double-encoded as both something felt and as something shared through signaling with others. This double-encoding includes not simply the feeling of what things are like, but their symbolic significance shared with others through a nurturing connection. Patterns of emotional signaling become recognized for their social significance allowing the child to make sense of the world and develop a sense of self. These experiences detach from action and become symbolic, which can then be recognized and labeled. Emotional transformations occur which guide intellectual development and reflective thinking, with emotion "orchestrating cognitive, language, motor, sensory, and social experience" (Greenspan & Shanker, 2004: 51). It is the growing sense of self that integrates different emotional aspects of self, (i.e., "good" self with "angry" self) that provides a capacity for reflection, gray area thinking, and an internal standard which replaces concrete

operations (Greenspan & Shanker, 2004).

Recall the degree of social and emotion engagement, as well as person perspective, results in different “styles” social cognition from the differential recruitment of neural brain systems in social information processing (Schilbach *et al.*, 2013). These differ whether one is engaged emotionally or not and whether interactive with another or distanced as an observer, yielding different temporal neurological patterns of social information processing, resulting in different social cognitions (cf **Fig. 3.2**). Differences in social and emotional engagement, whether from an observational standpoint or an engaged standpoint, different brain networks involved in different types of processing are activated differentially, producing different ways of perceiving, feeling and knowing.

Different combinations of person perspective in the evaluation of the social frame containing internal, external, and historical information would then recruit different patterns of brain system switching, each representing some fundamental neural circuit involved in information processing yielding an inferential product, in the form of a feeling, intuition, or propositional statement. Different combinations of perspectives from the social frame would then correspond different categorizations of the situated conceptualization (Barsalou, 2015), yielding all the different types symbolic meaning extracted from a social encounter, describing the categories of the semiotic.

These would represent different combinations of brain system functioning in some information processing capacity, producing different categories of social information related to the situated conceptualization (Barsalou, 2015). These different categories of social information must relate to all the various combinations of firstness, secondness, and thirdness can be combined, which according to Peirce, occur in a very precise structure of categorization. Recall Peirce’s categories of semiosis (**Fig. 15.2**), the systematic combinations of firstness, secondness, and thirdness corresponding to different ways the semiotic extracts meaning over a continua ranging from feeling to propositional semantics. That systematic pattern of relations between the semiotic triad of sign vehicle, object and interpretant when focused upon a self-, other-, or object-focus in some social situation represents different combinations of subjectivity spanning the semiotic levels of self (cf. **Fig. 15.6**)(Wiley, 1995).

This rather abstract description of the relation of theories to each other, is more easily grasped by expanding Peirce’s categories of semiosis, as in the figure below:

**Distribution of Categories in Semiosis  
Perspective Focus & Brain System Recruitment**

	ROI	Classes of Sign Triad Type	Phenomena	Perspective	Brain Systems
1	1 1 1	rhematic iconic qualisign	a general vague of hurt	subjective self-focus	AIC
2	2 1 1	rhematic iconic sinsign	a model	intersubjective self-focus	AIC-ACC
3	2 2 1	rhematic indexical sinsign	an involuntary shout	intersubjective other-focus	AIC-ACC, dIPRC
4	2 2 2	dicent indexical sinsign	a weathervane (pointing in direction of the wind)	intersubjective group-focus	AIC-ACC, vmPRC
5	3 1 1	rhematic iconic legisign	onomatopoeia: "cock-a-doodle-doo"	extra-subjective self-focus	leftH, AIC-ACC
6	3 2 1	rhematic indexical legisign	an indexical word: "that"	extra-subjective intersubjective other-focus	leftH, AIC-ACC, dIPRC
7	3 2 2	dicent indexical legisign	a red light in context	extra-subjective intersubjective group-focus	leftH, AIC-ACC, dIPRC, vmPRC
8	3 3 1	rhematic symbolic legisign	a common noun: "apple"	extra-subjective extra-subjective self-focus	leftH, AIC-ACC, vmPRC
9	3 3 2	dicent symbolic legisign	a proposition: "it's cold in here"	extra-subjective extra-subjective other-focus	leftH, AIC-ACC, dIPRC, vmPRC
10	3 3 3	argument symbolic legisign	<b>abduction:</b> "It's cold in here" Interpreted as a request to close the window.	extra-subjective extra-subjective group-focus	leftH, AIC-ACC, dIPRC, vmPRC
			<b>induction:</b> "Where there is smoke there is fire"	extra-subjective extra-subjective group-focus	leftH, AIC-ACC, dIPRC, vmPRC
			<b>deduction:</b> the red light of the traffic code in the abstract.	extra-subjective extra-subjective group-focus	leftH, AIC-ACC, dIPRC, vmPRC

**Fig. 27.2** - Categories in Semiosis, Perspective Focus & Brain System Recruitment - *Source:*  
Everaert-Desmedt (2011)

The Categories in Semiosis chart offers in **Fig. 15.2** is extended in **Fig. 27.2** to include two speculative columns related to ontological **Perspective** of the inference of the semiotic triad, as well as the **Brain Systems** recruited to implement the inferential "computation," which in the semiotic process seems virtually instantaneous. The values for these two columns in **Fig. 27.2** are only example data to demonstrate what possibly could be tracked with language competency across psychological and neurophysiological testing, and not meant to be accurate. They are *highly speculative* and only offered as demonstrative of the kind of high level data from other scientific disciplines might correlate their measurements with a more finely delimited stage theory.

The subjective, intersubjective, and objective correspond to Peirce's general categories of firstness, secondness, and thirdness, respectively, as in **Fig. 27.2**. The intersubjective second-person perspective represents the fundamental experiential state from birth, the social dimension. The infant is able to glean information from its environment through the shared dyadic experience to associate the caregivers attention to itself through play. The various states of emotion exchange and coordinated facial displays grow the subjective experience of the child. The back and forth of co-regulation and play lead to ability to both follow and lead in eliciting joint affective states. From about this time the child can already sense the intention of the caregiver (Reddy, 2008). Later, the the building of experience with objects becomes the focus, leading to joint experimentation and play with objects, with distal regulation through distanced looking and pointing with the caregiver, developing the objective perspective.

The categories in semiosis provides the organizing pattern to integrate ontological perspectives (subjective, intersubjective, objective), brain system functional and temporal patterning, and the relational model logic. Each category is a combination of the parts of the semiotic. The sign vehicle (Representamen), the Object, and an Interpretant, produce meaning, or in the terms of the situated conceptualization, a concept. This study proposes this categorization is the functional product of the "essential mechanism of development" described by Schore (2009: 112) in the right-brain to right-brain emotional engagement with the caregiver that wires the non-conscious, implicit affective regulatory system (Schore, 2009). The exercise and wiring up of these functional brain systems control the autonomic system through the operation of the limbic system controls of the Salience Network's component systems with the Central Executive Network and eventually the Default Mode Network. All these representational categories would be located in 3-D affective space through the integration of affect, motivation and perception information processing. This then provides the functional system that allows for "primary" emotion categorization representation, which become "culture bound" prototype categorizations like the vowel sound prototypes that solidify during the first year of infancy (Kuhl & Meltzoff, 1997).

Thus, the categories of semiosis can be seen a families of social relational inference related to operants ranging from physical to verbal. Thus, it could be possible according to the hypothesis stated previously that classes of VENs implementing RFT's hierarchical families of inferential operants correspond to the categories in **Fig. 27.2**, which also correspond to constellations of brain regions recruited to instantaneously produce the inferred meaning of the semiotic object. All language communicators have the ability to infer using any of these semiotic categories, as they are necessary for language competence. However, their mastery, much like the mastery of RFT relational frames, emerge in a certain order during ontogeny and could be more discretely measured to provide a more finely grained "stage theory" in building language competency.

Additionally, stage theories of development could be traced to far earlier in ontogeny, whereas the stage theory typically start with language competency after the fourth year of life. However, it is during the first several years of life that development is concentrated in setting the foundations of emotion processing, highly right-hemispheric, which changes to a left-hemispheric dominant during the first words and language emergence. So too are the primary affect foundations in subcortical

regions of the midbrain developing (Panksepp, 1998), which during this time are highly susceptible to chronic stress effects having life-long down regulating effects on the reward system affecting mesolimbic DA functioning (Beauchaine et al., 2011). The Intrinsic Motive Formation network model (IMF, Trevarthen & Aitken, 1994) separates the seven primary brain affects into different functional channels which provide affective guidance according to fundamental perspectives: interoceptive perceptions focused inward, exteroceptive perceptions focused outwards towards objects, alteroceptive perceptions focused upon the social dyad, and a fourth focused upon cultural level interaction (eg Play).

Children begin life as neonates who very early develop a primary intersubjectivity before even subjectivity or objectivity, through affective interactions with caregivers (Trevarthen, 1979), which enables infants to form representations (Reddy et al., 1998). Primary intersubjectivity must give rise to both subjectivity and objectivity in stages which precede the important period in which child develop the ability to engage in joint attention. This stage in developmental studies, particularly comparative studies of human infants with young primates, show a distinct point in which humans diverge in their ability to eventually reference symbolically (Deacon, 1997, 2012). The primary affects represent information informing the subject about different ontological perspectives which require coordination gained through socializing processes with caregivers. However, given the tiered nature of brain systems, a primary coordination must occur first, which this study hypothesizes creates Peirce's universal primary proto-categories of firstness, secondness, and thirdness (Everaert-Desmedt, 2011) which eventually allow higher level categorization for symbolic reference.

However, before considering the critical juncture in human development of the emergence of Joint Attention (Tomasello, 1999) to be universal, care must be taken to assure that it is not a product of the "WEIRD" orientation (Western, Educated, Industrialized, Rich, and Democratic) (Henrich, Heine, & Norenzayan, 2010). The WEIRD orientation reflects a bias of scientific research in which researcher, reader, or subject of study share a similar culture that represents less than 5 percent of humans, is vastly different than the cultural milieu of human evolutionary history, and neglects other cultural orientations (Henrich, Heine, & Norenzayan, 2010). The critique of a persistent WEIRD sampling bias in Psychological Developmental studies (Nielsen et al., 2017) and Psychology as a whole (Arnett, 2008), obviates the necessity for any universal developmental theory of affect, morality or language to take account of how culture scripts of "how to be" influence the child as



subject. When researcher, reader, and subject of study share the same a “white middle-class literate” culture, it may represent “a paradox of familiarity” (Ochs & Schieffelin, 1994: 477) that makes interpreting behavior or attributing motives clear but also obscures particular cultural influences on “form, function, and content” of communication between caregiver and child (Ochs & Schieffelin, 1994). While some aspects of caregiver-infant interaction may seem “natural” or innate, they may instead be rooted in cultural practices and institutional adaptations (Ochs & Schieffelin, 1994: 477), leading to different developmental pathways.

Support for this has been found in comparative studies using an ethnographic approach to the study of infant socialization across different cultures. In them, descriptions of non-verbal and verbal behaviors of the communicative aspects of caregiver and child socialization practices are susceptible to these hidden cultural biases which may seem “natural” or innate without comparing to similar pursuits in other cultures (Ochs & Schieffelin, 1994). A comparative study of caregiver-infant communication in a non-literate egalitarian culture, a highly stratified non-western culture, and a white middle-class culture show that “what is nature and what is nurture (cultural) extends to patterns of caregiving and child development” (Ochs & Schieffelin, 1994: 478). Cultures differ in the patterns of dyadic and triadic communication forms used by caregivers towards infants, and there is not one particular “biologically designed choreography” (Stern, 1977) to caregiver - infant interaction (Ochs & Schieffelin, 1994). Rather, there many choreographies, which diverge from the white, middle-class highly engaged dyadic interactional model that typify western developmental models (eg, Tomasello, 1999).

Ochs & Schieffelin contrast two different culture’s child-rearing ethnographies with the white middle-class pattern in which caregiver directed and encouraged dyadic ABABA, eye to eye engagement between mother and child. In this pattern, the caregiver makes accommodations for the infant, tailoring its environment to be suited for a baby, tailoring a schedule to the baby, adjusting speech style and content especially for the infant, eliciting specific responses, masking incompetence such as completing tasks while attributing success by the infant, and effortful attempts to understand unintelligible responses from the infant with the caregiver providing the interpretation (Ochs & Schieffelin, 1994). These differ greatly from the cultural childrearing practices in the other two cultures.

West -> adults treat infant as social being, taking the perspective of the child to identify what the child's utterances mean and facilitating exchanges based upon that interpretation. Special preparation of the child's environment to be safe, tailored to size of the infant, separated from adult environment, and encouragement of dependency leads to denial of certain types of knowledge and delay of certain competencies (Ochs & Schieffelin, 1994: 481).

East 1 -> description ???

East 2 -> description ???

One ethnography details the Kulali cultural practices, a Papau New Guinea people, a non-literate egalitarian culture in which infants are considered helpless, "have no understanding," and require constant care with the infant always with the mother. The communication pattern is not directed by the caregiver to the child, but dyadically modeled towards others with the child faced outward towards others. In this pattern, the caregiver interacts with people and presents others to the infant while providing the speaking voiced part for the baby. The social environment of the Kulali is social open to many, so interaction patterns are triadic, and the mother's communication patterning can triadic ABACBA type patterns, always voicing the part of the infant for the others. The child is treated as non communicative and incompetent, but is awash surrounded by adult language in which the infant learns through exposure, but which doesn't address the infant directly but rather always as 3<sup>rd</sup> person until around 18 months when the child instructed how to speak through prepared, modeled sentences followed by an imperative to repeat. In this communication model, the instructor does not use baby-talk, but rather mature language which the child is expected to engage. In cases of unintelligibility, the caregiver does not attempt to infer what the child means, but requires the child to restate and be more clear.

The other ethnography details the Western Samoan cultural practices of a highly stratified society in which high status individuals command while lower status children and relatives administer child-care and interact with the child. For the first half year, the mother is close by the infant, with siblings and allo-parents assisting child-care tasks. Communication is directed about the child, not to them, as the child is considered non communicative, but when to them, in a sing song soft way towards the infant, and the infants responses reported on to higher status individuals rather than dyadically to the infant. Upon gaining mobility, the infant becomes awash in directives from the high status caregiver

to lower status caregivers who carry out interaction with the infant, thus communication patterns are multiparty ABCCA, with requests coming from the child (A) handed down to lower status individuals by those of high rank. Ambiguity in verbal requests are left up to those of lower rank, including the infant to decipher, while unintelligible responses by the child are not deciphered or interpreted by caregivers, but rather left up to the child to make more clear or are ignored.

Direct dyadic engagement between both of the dyad spur the use of different neural brain regions than in unengaged or one-way, observational interaction (Schillbach et al., 2014). The critique that Social and Affective neuroscience studies heavily test subjects from largely third-person or first-person objective perspectives while missing second-person intersubjective engagement, then, is reversed in infant developmental studies which focus mainly upon dyadic intersubjective engagement between caregiver-infant. However, other cultures in the world do not necessarily put their infants in second-person objective positions, which Ochs & Schieffelin (1994) characterize as a cultural pattern found among a small proportion of human variance. Second-person dyadic interaction differs from third-person observational and first-person observational interactive positions, for which would lead to different analytic results than the vast, largely observational testing done in neuroimaging, and largely providing a narrow characterization of human neural patterns in interaction. The three communication “choreographies” of caregiver-infant development represent three different patterns of engagement and interaction that would correspond with different squares recruiting different sets of brain regions in **Fig. 3.2** from Schillbach et al. (2014). Beyond simply echoing Schillbach and colleague’s call for a second-person neuroscience, variance across human cultures must be accounted at all levels of human (and animal) studies of affect and social interaction.

As in the combined model of moral motivations (**Fig. 26.13**), neurophysiological structure and functionality relating to regulation of primary affects constrains higher levels of abstraction/representation, for which current theoretical models and theoretical debates miss. This same structure must also constrain development, which points then to the importance of the development of the primary affect system and the coordination of the Intrinsic Motive Formation (IMF) guidance system of movement in **Fig. 9.3** being central towards elucidating those constraints. Each of the IMF systems are produced by distinct neural circuits involving subcortical, midbrain dopaminergic pathways in concert with higher cortical areas (Panksepp, 1998), which gradually become

reorganized by higher order representations enabling cognitive control of lower level systems, while lower levels constrain higher levels as in **Fig. 9.5**.

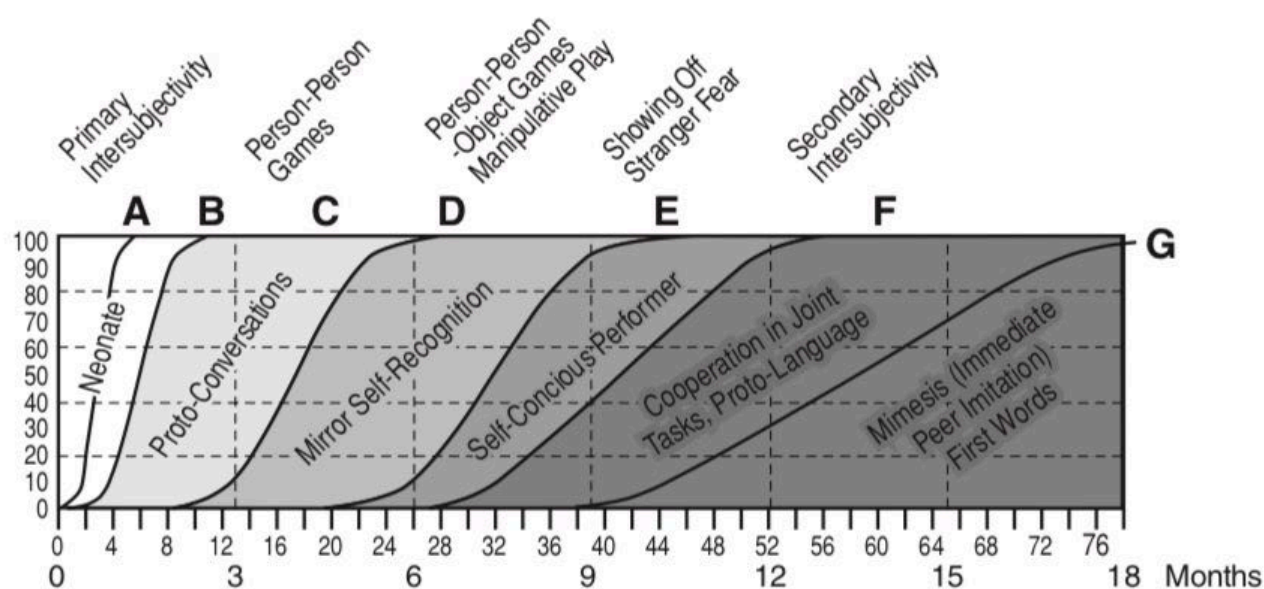
The development of primary affect systems occurs pre-verbally, so the child's intention and capabilities must be inferred from observation. Scientists have pointed to the emergence of triadic joint attention as the point which human development allows an entirely new form of organization across humans, namely language. If triadic Joint Attention is indeed the point at which humans diverge from other species in their abilities, a full accounting of alternate "choreographies" of socialization must be included.

However, following the caregiving ethnographies above, Tomasello's (1999) model of the stages necessary for triadic Joint Attention (**Fig. 18.1**) seem to reflect the white middle-class cultural pattern of interaction, as cultures differ in their use of eye gaze, vocalization and body alignment, as well as interactional patterns of communication from both first-person and third-person observational to second-person dyadic, to triadic. The dimensions of person perspective and regulatory inhibition or activation from **Fig. 26.15** again provide the constraints on a hierarchical affect system. It is the hierarchical functional structure of the brain and body which provides the clues to be able to disentangle and order the differences of caregiver-infant interaction among varied cultures into a coherent picture of affect structures and function. Tomasello's stage model of triadic Joint Intention is instructive in reconstructing the possible hierarchical development of the Intrinsic Motive Foundation (IMF) (**Fig. 27.2**), which joins together the three agentic perspectives, while the system itself provides the drives of inhibition or activation which pattern across different combinations of IMF perception systems interacting. These stages of Tomasello's model are generalized attempts to communicate distally through visual attention, which via the coordination of primary affect systems, locate representations in an affective space, pre-verbally, namely the EPA affective dimensional space.

As previously mentioned, EPA-like dimensions of affect have been found in other modalities of perception using semantic differential type measures, such as visual perception of line drawing (Suzuki, Gyoba & Sakuta, 2005) and textures (Liu et al., 2015); auditory perception of music intervals (Costa et al., 2000); olfactory perception of odors (Dalton et al., 2008). However, the semantic differential is obviously a language based measurement tool, administrable to verbal human subjects,

while the EPA dimensions of affect may in fact be shared by mammals at the very least. This hypothesis can be made by considering the development of primary and secondary hierarchical levels of affect of **Fig. 9.3**, with subcortical brain structures common to all mammals. However, the steps to coordinate the three IMF perceptual systems may differ according to the culture, for dyadic and triadic patterns of communication would theoretically involve different temporal combinations of IMF perception system functioning to weigh the strength of needs versus demands of the environment given the resources available.

Trevarthen (1979) and others have outlined a primary intersubjectivity that develops early in infancy through reciprocal affect laden experiences with caregivers. Several additional stages have been theorized and observed in which an initial stage from birth involves mirroring, then at 2 months the beginning of reciprocal dyadic exchanges, followed by triadic exchanges in relation to an object, followed by exchanges of value about those objects, in what are constructing primary, secondary, and tertiary intersubjectivity (Rochat & Passos-Ferreira, 2009).



**Fig. 27.3** - Early Stages of Self Other Awareness - *Source: Trevarthen et al. (2006: 67, Fig. 2.2)*

There is also evidence that non-explicit learning processes begin early in life through embodied processes, where everyday practices involve the transmission of information that is gleaned as “culture” through affective interchanges. Central to that process is the alleroceptive perception (Panksepp, 1998) which processes affects during dyadic engagement. Social exchanges include much

information transmitted through non-verbal means, especially body comportments like gestures or posture, which are found to affect cognition and self-perception (Laird, 1997), and also are influenced by culture (Fiske, Thomsen, & Thein, 2009). Comportments are part of embodied processing, where information regarding the social relationship and social bond are exchanged through everyday social actions via non-verbal means, through movements of bodies. In fact, the relational logics of the first three Social Relational Mods (Fiske, 1991) are thought to be learned through embodied processes by young children (Fiske, Thomsen, & Thein, 2009).

The Relational Mods of Communal Sharing (CS), Authority Ranking (AR) and Equality Matching (ER), presumed to emerge in that order during socialization, also bear some resemblance to RFT's arbitrary applicable relational responding (AARR) operants of Temporality (CS), Hierarchy (AR), and Sameness (EM). It is possible that the Action Fluxes (Favre & Sornette, 2015) which correspond to the six mutually exclusive idealized interactions in which social objects can interact is dependent upon the mastery of these corresponding operants. Such a correspondence could then tie verbal operants with social behavioral models, accompanied by the model logic across emotional, motivational, and cognitive dimensions.

#### **Four Social Relational Models Manifestations & Features**

	Communal Sharing (CS)	Authority Ranking (AR)	Equality Matching (EM)	Market Pricing (MP)
Decision Making	Group Consensus	Chief Decides & Delegates	Voting	Market Mechanism
Group Organization	all pitch in without assignments	orders down a chain of command	everyone do an equal share	compensation depending on proportion
Social Influence	Conformity	Obedience	Compliance	Cost & Benefit Incentives
Social Identity	Membership in a Natural Kind	Social Rank	Co-Equal Peer	Occupation or Economic Role
Natural Selection Mechanism	Kin Selection	Dominance / Submission Adaptiveness	"Tit-for-Tat" In-Kind Reciprocity	Specialization & Commodity Exchange
Relational Structure	Equivalence Relation	Linear Ordering	Ordered Abelian Group	Archimedean Ordered Field
Measurement Scale Type	Categorical or Nominal	Ordinal	Interval	Ratio
Significance of Time	Relationships idealized as Eternal Perpetuation of Tradition	Sequential Ordering by Rank Temporal Priority to Superiors	Oscillation of Reciprocity Synchrony of Action	Calculus of Rates of Interest/Return/Pay Efficient use of Time
Relationship Marking Mode	Enactive, Kinesthetic, Sensorimotor Rituals	Spatiotemporal Ordering	Concrete Operations	Abstract Symbolic Representation
Constitutive Media	<b>Consubstantial Assimilation</b> Birthing, Nursing, Food Sharing, Ritual Synchronization, Movement, Shared Pain	<b>Social Physics</b> Above, In Front, Earlier, Larger, More Numerous, Greater Force	<b>Concrete Operations</b> Turn taking, In-kind Reciprocity, 1:1 Correspondence, Balance, Alignment	<b>Arbitrary Signs</b> Money, Propositional Language, Writing, Numbers & Math, Digital Accounts
Motivation	Intimacy	Power	Equity	Achievement
Moral Motive	Unity	Hierarchy	Equality	Proportionality
Moral Ideology	Group Legitimization	Heteronomy	Balanced Reciprocity	Rational Legal Legitimation
Moral Judgment	everyone's suffering as one's own	obey command of elders or God	treat each person equally	everyone in proportion to deserving
Age of Externalization	Infancy	3 years old	4 years old	9 years old
* Autonomic Mode of Control	Uncoupled PNS Withdrawal / Activation	Uncoupled SNS Withdrawal / Activation	Reciprocal SNS / PNS Activation	SNS / PNS Colnhibition & CoActivation
* Autonomic Mode Primaries	Depression – Satisfaction	Fear – Anger	Disgust – Trust	Surprise – Anticipation
* E/S Emotion Structures	Elemental	Attributional (Complementary)	Distributional (Symmetrical)	Interactional
* Expectation Emotion Pairs	Approving – Disapproving Impressed – Disillusioned	Honor – Disgrace Manipulative – Powerlessness	Pride – Shame Inferiority – Superiority	Generosity – Regret Helplessness – Ineffectiveness
* Sanction Emotion Pairs	Happy – Sad Affection – Hostility	Impressed – Disillusioned Disgust – Compassion	Joy – Sorry Excluded – Selfishness	Gratitude – Anger Hopelessness – Ungratefulness
* Kemper's Relational Channels	Own Power	Other's Power	Own Status	Other's Status
* Kemper's Hidden Variables	Controlling Aggression	Autonomy	Competency & Achievement	Giving & Loving
* Plutchik Problems of Life	Temporality	Hierarchy	Identity	Territoriality
* Plutchik Emotion Pairs	Sadness – Joy	Fear – Anger	Disgust – Acceptance	Surprise – Anticipation
* Semiotic Structure	Indexical / Metonymic	Iconic / Metaphoric	Procedural	Symbolic

**Fig. 27.4** - RMT Manifestations & Features w/ Motivations adding Emotion Theories -  
 Sources: Fiske (1992: 694-696; 2004b)

*“these four conformation systems provide distinct channels of cultural transmission: Children learn who is equivalent to whom by observing the consubstantial assimilation of bodies. They learn who ranks above and below whom by observing people positioned along dimensions of space, time, magnitude, and force. Children learn who is equal to whom by observing concrete operations that manipulate things or persons so they match in one-to-one correspondence; when our bodies or our portions are lined up evenly so they match, we are equal. In contrast, children learn ratios such as wages, prices, or cost-benefit and utility calculations through symbol systems that are culturally determined; there is no other way to do so because the ratios that coordinate MP are intrinsically abstract.” Fiske (2009: 1295-1296)*

The integration of relational types through language mastery as theorized by RFT could provide a trace through socialization of the emergence of social relational model logic. The matrix provided by Fiske in **Fig. 27.4** above contains the theoretical addition of RMT's correspondence to theories of emotion (those rows with a dark grey entry in the first column). Plutchik (1979) again provides the basic categories in the four sets of primary emotion pairs thought evolved from adaptive strategies to solve some basic set of problems of life, serving as separate signals with which to adjust behavior according to situational stimuli. These emotion pairs over time became instinctual through natural selection would then be available for repurposing to solve other problems by becoming generalized categories for guiding social relational action. These categories provide a way to connect Relational Models Theory (Fiske, 1991). The simultaneous affective exchanges and typical exercise of the different modes of Autonomic Control (Berntson et al., 1992) occurring at the same time as the brain structure modes, could confirm the synthesis of Plutchik's primaries in relation to the Problems of Life (Plutchik, 1979). It is possible to match Plutchik's problems of life with RMT's proposed natural selection mechanisms that drove neurological and autonomic changes, providing a point of correlation of the two theories.

Tenhouten (1995) noted the alignment of Plutchik's existential problems - Identity, Hierarchy, Territoriality, Temporality - with RMT's Equality Matching, Authority Ranking, Market Pricing, and

Communal Sharing, respectively. The bipolar emotion pairs represent prototypical reactions which guide adaptive behavior to overcome a common problem/situation around a social relational pattern (Tenhouten 1995: 443). Recall Plutchik's model of emotion proposed that certain existential problems of life were so common to in our evolutionary past that particular adaptations that provided success became instinctual. The adaptations were conceived of as evaluative mechanisms using feeling for selecting an adaptive response of Approach in the case of a positive feeling or of Avoidance in the case of negative feeling. When evaluated psychologically, they are felt as bipolar "primary" emotions guiding motivation and adaptive behavior.

Thus, the problem of Temporality, essentially distress from loss of loved one/group member, involves emotions of Sadness and Joy for facilitating sympathy and nurturing, analogous to Depression and Satisfaction modes of the uncoupled Parasympathetic functioning of the ANS. This problem of life seems most ancient in agreement with Fiske's (1991: 197) assertion of the CS relational structure homologous across many other species, aligning with a natural selection mechanism of Kin Selection, and ontologically first.

Similarly, the problem of Hierarchy found in the dominance/submission in the struggle for resources is managed by Sympathetic fight and flight, analogous to the Anger and Fear modes of uncoupled Sympathetic functioning of the ANS. This problem of life is also shared with many species, particularly well studied in the AR linear ordered dominance hierarchies exhibited by many social animals, particularly mammals.

Likewise, the problem of Identity, essentially defined by acceptance by or rejection from the group, is regulated by Trust and Disgust (Pride and Shame), opposite modes of reciprocal PNS and SNS activation, respectively. Fiske (1991) offers that there are no other species exhibiting EM features, as its supposed natural selection mechanism balanced reciprocal altruism (Axelrod, 1984)(Trivers, 1971) has been sparingly found in great ape species (De Waal, 1982)(Mitani, 2009).

Lastly, the problem of Territoriality, involving the managing the boundary of one's territory and orientation against intrusion, requires Anticipation and Surprise respectively, the Co-activation and Co-inhibition modes of PNS/SNS functioning. While a common problem to many types of species, its relation to MP is in the rational calculation and estimation of costs and benefits found in



Specialization & Commodity Exchange, two human enterprises having evolutionary impact without analogue in the non-human world (Fiske, 1991). It remains to be seen if human CS, AR, EM or even MP are phylogenetically homologous in other species, or whether their appearance is an example of convergent evolution (Fiske, 1991: 198-199).

With the basic prototype emotion categories set, the process of language acquisition builds a symbolic system relating concepts to basic dimensions of affect during the second year of life, as the brain development shows left-hemispheric lateralization (Schoore, 2009). The fully symbolic system then is able to grow according to patterns of social development, where orderings of social actors relate to the hierarchic scale types (Stevens, 1946) of **nominal**, **ordinal**, **interval**, and **ratio**.

The nominal scale type of CS., society regulated by who's in the group (categorically alike, aka, kin) versus who's not, emerges from the elementary group needs of expecting all in the group to conform by controlling aggression via parasympathetic regulation by limiting one's own power, where the pattern of Dorsal Vagal (DVC) and Ventral Vagal (VVC) co-regulation prototyped during infant care and nursing provides the archetype. The sharing of constitutive substance such as milk, blood or genes serve as cultural cues, "materializing group cohesion" during nursing that is later thematized in family and kin dynamics of food sharing (Fiske & Fiske, 2007). Thus, elemental emotion categories regulating meeting group expectations (Satisfaction-Depression) and receiving rewards (Affection-Hostility) by controlling Parasympathetic withdrawal/activation first modeled in nursing become the archetypes for group regulation for all kindred members of the group.

The ordinal scale type of AR, society regulated by social physics (bigger, stronger, more authority, rank hierarchy), emerges from comparison structural relations guided by complementary differentials between ranked individuals, which emerge from group ordering according to dominance hierarchy measured through comparison with other's power and status (attributional) and with other's expectations and sanctions (distributional). Social physics of in front/behind, above/below, stronger/weaker, forceful/weaker, etc become highly salient. Focusing on power and status attributions, as learning to navigate the power of others includes learning complementary roles and earning autonomy through negotiation of the hierarchy, requiring knowing when to show deference to superiors and when to use manipulative strategy to move up in the hierarchy. This requires regulation of Sympathetic withdrawal/arousal by controlling one's fight or flight reflex when

confronted with another's dominant role such as a parent or older sibling and differential outcomes. Relevant expectation & sanction comparisons in conflicts generate complementary emotion categories such as attributional Manipulation/Submission & Disgust/Compassion action tendencies while differential distributional outcomes require regulating complementary Superiority/Inferiority & Selfishness/Jealousy.

The interval scale type of ER, society regulated by balances of social exchanges (accounts of owing or giving assortive individuals), emerges from reordering the hierarchy within groups through symmetrical social practices such that social regulation between peer balances through negotiated in kind reciprocity and turn taking. As groups expand beyond kin groups by adding non-related subgroups, the hierarchy becomes blurred. Management of groups and building of shared identities relies on negotiating acceptance through equal exchange and participation, requiring the synchronization of SNS & PNS reciprocal modes to produce states of affiliative trust or coalitional disgust. This is coordinated through balancing symmetrical distributions for expectations or punishments/rewards. Matching meeting/missing expectations produce emotion categories such as Proud/Shame while matching rewards/punishments results in Joy/Sorry categories.

The ratio scale type of MP, society regulated by balances for social exchange based on abstract medium (money, trade among strangers), emerges from the negotiation of interactional social dimensions, where cost benefit analysis and strategy crucial in group living require enforcing norms. Since meeting norms requires reigning in individual desires for the good of the group, as well as enforcing norms sometimes with a cost to oneself, a regulatory system which uses proportionality of action/response provides a mechanism which maximizes cooperation, in the trade off between norm enforcement looseness to allow for creativity with tightness for reigning in harmful norm violations. Thus, a graded interactional repertoire required for balancing action and sanction according to norms requires managing SNS & PNS co-activation or co-inhibition states to be able to anticipate costs/benefits and assess surprising outcomes.

How the hierarchic reordering of levels occurs during development has not been fully elucidated and requires a reconstruction of developmental stages and hierarchic reordering of lower level affects. Previous versions of this study have attempted to integrate an analytic of affect into developmental stage theory which traditionally focused its analytic upon cognition, with the first attempt following

Habermas' developmental reconstruction of the transition from the Preconventional to the Conventional (cf Habermas, 1990: 116-170). That reconstruction begins during the preconventional stage where children already have basic language skills and capabilities of emotion comprehension of both themselves and others. Fiske's Relational Model Theory (RMT) posits relational model logic emerges over stages during childhood beginning during infancy, which must also be integrated to any developmental stage theory of affect. Lastly, this study has added the primary affect system which develops prenatally and during the neonate period, which must also be accounted for in a developmental stage theory. A full developmental account of a universal morality must account for development in which neurophysiological, psychological, social, and cultural emotions cohere, while not falling prey to a WEIRD bias that fails to account for alternative patterns of socialization from the many cultures differing from western, educated, industrialized, rich and democratic subjects, testers, or readers.

Habermas' claims a rational reconstruction must be corroborated with other empirical theories, identifying Kohlberg's stage theory of moral development (**Fig. 27.1**) as one which joins "the rational reconstruction of moral intuitions (philosophy) and the empirical analysis of moral development (psychology)" (Habermas, 1990: 33). Habermas chooses a middle path between Relativism and Absolutism by analyzing language and communication between humans engaged with each other, not in isolation but situated socially and culturally. The Theory of Communicative Action (TCA; Habermas, 1981; 1984) is a social theory which envisions communication as a tacit agreement to come to some kind of understanding through communicative action, defined to be the integration of speech acts and behavioral action. The TCA posits the fundamental basis for all human social action, at its roots, is a cooperative endeavor towards *reaching understanding*. It is from the amalgam of speech and action that the truth value of knowledge is communicated and evaluated from a common objective viewpoint. All other types of human social action - conflict, competition, strategic action - are derivatives of communicative action (Habermas, 1990: 1). The TCA hypothesizes that the emergence and structure of language provide not only the medium of coming to cooperative understanding through speech acts, but also serve to coordinate behavior through symbolically mediated action. Thus, communication is tacitly an effort to understand both our own and Alter's social action, and the medium through which to coordinate such action. The coordination through speech of turn taking and acting in roles of speaker, listener and observer corresponds to first- & second-participant perspectives and third-person observer perspectives, respectively.

Habermas offers that “there are structural relationships between moral stages and social perspectives on the one hand, and stages of interaction on the other” which can “sustain the burden of justification...that the proposed hierarchy of action types reflects a logic of development” (Habermas, 1990: 167-168). The assertion that “higher-level cognitive structures replace the lower ones while preserving them in reorganized form...(the structure of which) would be difficult to analyze...would need to be demonstrated in detail” (1990, pp. 168-169). Habermas offers that his own reconstruction requires a “more precise concept of developmental logic to carry out this kind of analysis rigorously and to show how the sociocognitive inventory of the elementary stage is subjected to the reconstructive operations of self-application (reflexivity), generalization, and idealizing abstraction” (1990, pp. 169). An additional empirical framework must be added to Communicative Action to allow for direct analysis of the integration of speech and action in discreet enough form to account for the “logic of development.”

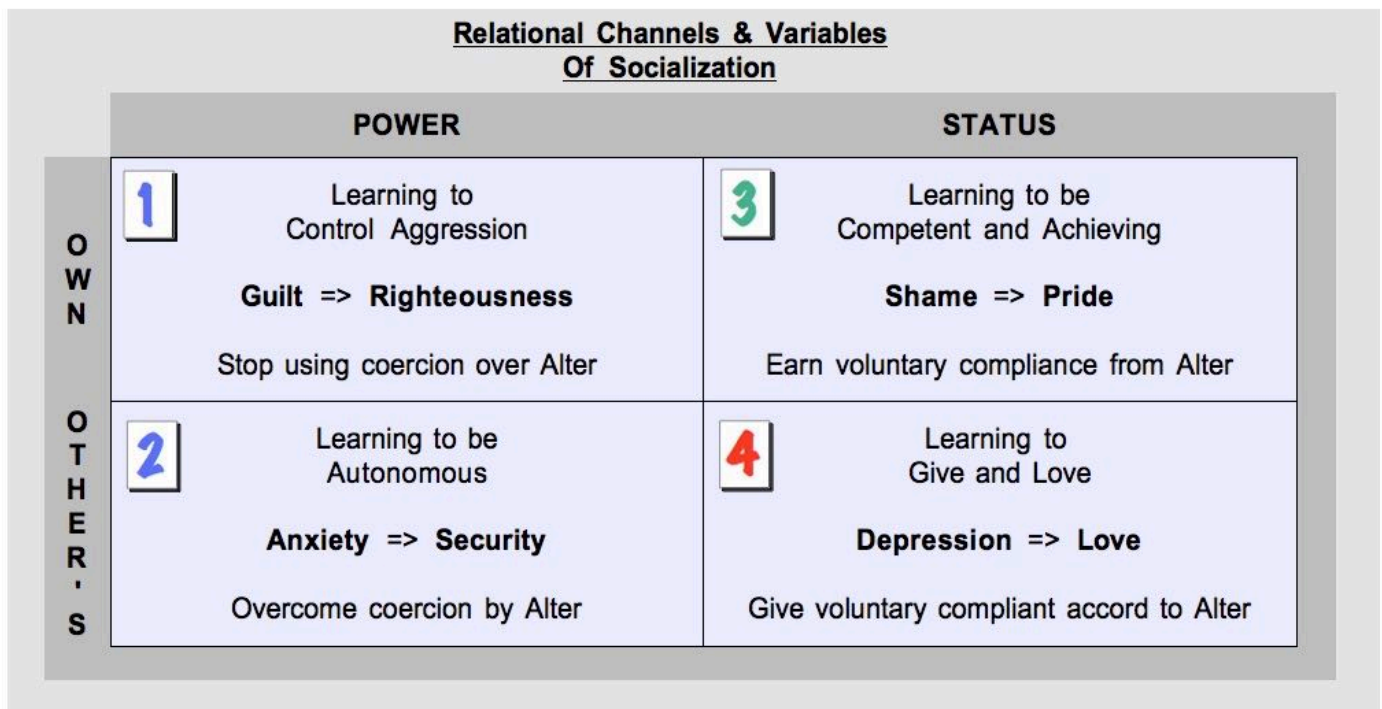
*“Emotional expressions help individuals know others’ emotions, beliefs, and intentions, thus rapidly coordinating social interactions...emotional communication evokes complementary and reciprocal emotions in others that help individuals respond to significant social events...and emotions serve as incentives or deterrents for other individuals’ social behaviour.”*

*Keltner & Haidt (1999: 511)*

While Habermas explains much of his reconstruction in purely cognitive terms, he hints that the self-conscious emotions, such as the Shame and Guilt which emerge from transition from externally imposed punishment, are markers of a developmental logic. Emotion and cognition cannot be treated as separate (Pessoa, 2015), since “neuroscientific evidence show(s) the two are largely integrated and mutually enabling” (Verweij et al., 2015: 4). It is precisely an account of socio-emotional development which offers a model more discreetly measurable than high level, ambiguous cognitive forms. Habermas’ cognitive reconstruction must include a social-emotional analytic.

Kemper’s (1978) Power & Status Theory of Emotion, which explains emotion generation from Power and Status structural relations, proposes a set of dependent variables that are critical during the socialization process that come directly from the four channels of Self and Other’s Power and Status. These are Controlling Aggression, Autonomy, Competence & Achievement, and Giving-Loving

(Kemper, 1978: 270). These dependent variable are characterized as personality attributes the child gains as they navigate Power and Status relationships during socialization. These are gained by learning to practice social interaction to avoid distressful emotions and approach positive emotions (ibid, pg. 263). They come in bipolar emotion pairs which can be seen as emotional guideposts, which could be measured through systematic observation, allowing for a discrete, empirical model of social emotional development.




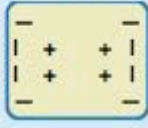
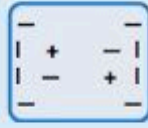

**Fig. 27.5** — Relational Channels & Variables of Socialization — *Source: Kemper (1978: 271)*

Kemper's model in **Fig. 27.5** above shows competencies acquired progressively over the course of development, enacted through self-regulatory behaviors integrating Power and Status dimensions of social interaction. These include (1) the ability to manage one's own use of Power, (2) overcoming anxiety from others' usage of Power, (3) bestowing Status on others, and (4) earning Status through competency and achievement. Each has a signature emotional hurdle, involving modifying behavior by to avoid a negative outcome and actively pursue a positive outcome. Each of these dependent variables seem to be as analogous to the Problems of Life (Plutchik, 1980a), where bipolar pairs of emotions provide adaptive feedback for guiding behavior towards solutions which solve some common problem encountered by all human groups.

The successful integration of each of these variables of socialization require becoming conscious of the negative emotions generated by the obstacles for each relational dimension, and adjusting behavior from self-conscious appraisals of others' first order displays so that these are regulated and overcome, producing a corresponding positive emotion (reward). Thus, socio-relational competencies along structural dimensions represent the building blocks involved in socio-emotional development, with the integration of Kemper's power status variables as the guide. Although no empirical model is provided for their measure, it seems they can be integrated with Habermas' account.

The critical period highlighted in Habermas' developmental reconstruction occurs at the point at which reciprocal relations diverge into Authority-governed Complementary and Interest-governed Symmetrical reciprocal forms, each having cooperative and conflict action orientations (Habermas (1990: 148). The key seems to be that at the Preconventional level, Authority-Governed complementarity involves Power differentials while Interest-Governed symmetry involve Status differentials. Power conflicts occur when one actor has "excessive power or more power than the other" (Thamm, 2004: 203), while low power consensus represents a cooperative form. For status conflicts, "actors view each other as inferior or superior, as having more pride or shame than the other, and as having more or less honor or disgrace" (Thamm, 2004: 205), while reciprocally equal statuses represents a cooperative form. Thus, Habermas' Forms of Reciprocity and Action orientations are analogous to PSToE's structural Conflict and Consensus E/S structures, as in **Fig. 27.6** below:

**Preconventional Reciprocal Action Orientations**  
**with Corresponding Power Status Forms**

ACTION ORIENTATIONS		Forms of Reciprocity			
		Authority-Governed Complementarity		Interest-Governed Symmetry	
ACTION ORIENTATIONS	Cooperation	1	Power Consensus 	3	Status Consensus 
	Conflict	2	Power Advantage 	4	Status Advantage 

**Fig. 27.6** — Preconventional Reciprocal Action Orientations w/ PSToE Conflict & Consensus structures —

*Sources: Habermas (1990: 148), Thamm (2004; 2007)*

Thus, in **Fig. 27.6** cooperative action orientations correspond to the general (1) Power Consensus and (3) Status Consensus forms, while conflict with (2) Power Advantage and (4) Status Advantage. Case 1 illustrates the cooperative effort guided by Authority, which requires of the child to learn to control aggression and abstain from using power (coercion, anger, deceit, etc.), i.e., managing one's own Power. Case 2 illustrates the conflict relations with authority, requiring the child to learn to overcome distress from coercion and gain Autonomy, i.e., managing to overcome Alter's Power. Case 3 represents the cooperative effort guided by Interest, which requires the child to earn deference from another, i.e., learning to become competent and achieving. Case 4 represents the conflict between self-interests in a symmetrical relationship, learning to give deference to another in order to overcome the infinite regress of symmetrical conflict, i.e., learning to achieve through giving/loving.

In preconventional contexts, Authority governed means threat of punishment by adults, while interest governed refers to attempts claiming or denying status with peers, with the cases representing (1) Child-Adult cooperation, (2) Child-Adult conflict, (3) Child-Child cooperation, and









(4) Child-Child conflict, as described by Habermas (1990: 147-150). These focus upon different social structural dimensions of relationships, of which can be expressed by different substructures of the E/S comparisons, as in **Fig. 8.5**.

The general E/S diagrams are composed of a variety of different structures which can be compared, producing a categorical emotion from the appraisal, even subconsciously. The horizontal distributional comparison of Expectations (E) and Sanctions (S), compares both Self and Alter meeting expectations or the distribution of sanctions. An attributional comparison compares the E/S for a particular actor (vertical column), which is a different relational structure. Similarly, an Interactional relationship between the two actors compares the E/S with oppositely positioned E/S for each actor (diagonal). According to Thamm (2004), the interactional relational structure is salient in Power conflicts, whereas the horizontal distributional and vertical attribution structures are salient in Status conflicts. This is because for (2) Power conflicts each actor's "diagonal signs are both consistent and effective," as the interaction between Ego's E/S ( + + ) and Alter's E/S ( - - ) show a Power Status Disadvantage where Ego is being coerced into giving while alter does not, producing the Resentment Syndrome (Thamm, 2004: 204). On the other hand, a Status conflict involves two sets of E/S comparisons, which in (4) show attributional imbalances between Ego's E/S( - - ) lack of Status and Alter's E/S( + + ) attribution of status, as well as the distributional imbalance between Ego's E( - + ) inferiority and S( - + ) exclusion, which reverses in the tit-for-tat scenario of E( + - ) superiority and S( + - ) inclusion.

This can be seen more easily by expanding **Fig. 27.7** to include the differences in substructure focus accompanied by the corresponding emotion category produced by the comparison appraisal, as seen in the following:



**Preconventional Reciprocal Action Orientations  
with Power Status Comparison Structural Emotions**

		Forms of Reciprocity							
		Authority-Governed Complementarity				Interest-Governed Symmetry			
		Case	E/S Form	Comparison	Emotion	Case	E/S Form	Comparison	Emotion
ORIENTATIONS ACTIONS	Cooperation	1	 E(++)	Distributional	Proud	3	 E/S(++)	Attributional	Honored / Impressed
			 S(--)	Distributional	Sorry	3	 E/S(++)	Distributional	Proud / Joy
	Conflict	2	 E/S(++)	Interactional	Generous	4	 E(+ -), E(- +)	Distributional	Superior / Inferior
			 E/S(- -)	Interactional	Angry		 S(+ -), S(- +)	Distributional	Selfish / Excluded
			E/S(- -)	Interactional	Regret		E/S(++)	Attributional	Honored / Impressed
			E/S(++)	Interactional	Gratitude		E/S(- -)	Attributional	Disgraced / Disillusioned

**Fig. 27.7** — Preconventional Reciprocal Action Orientations w/ PSToE Comparison Emotion Categories —

*Sources:* Habermas (1990: 148), Thamm (2004, 2007)

The emotion substructures in **Fig. 27.7** represent salient dimensions of the relationship for types of preconventional reciprocal action. Habermas identifies the symmetrical conflict exchange (4) in **Fig. 27.7**, as the hurdle which must first be overcome to reach a third-person perspective allowing the system of interaction to be viewed from an objective viewpoint. In a symmetrical context, conflict occurs when two child-peer interactants engage in tit-for-tat exchange, where each side responds in kind, like for like. Habermas contends the recognition of the endless regress of reciprocal symmetrical conflict provides the necessary leap to a higher, second order view of the dyadic interchange (1990, 147-150). This altering of person perspective results in a reconfiguration of the previously integrated speech and action at the Preconventional to a new Conventional form, which then may affect and challenge other preconventional capabilities, which may reflect positive disintegration in the adoption of new emotion structures in social interaction (cf Laycraft, 2019).

The melding of Habermas' and Kemper's models can further elaborate the details of a reconstruction of development and help guide construction of an analytic. Additionally, they can help to flesh out the emotional dynamics, as well as motivational dynamics, such as how and why stereotype BIAS emotions (Cuddy et al., 2008) manifest as they do, as well as Approach and Avoidance motivations. Fessler (1999) provides the logics for first-order evaluative emotions from structural relations,

previously presented in **Fig. 16.2**, whose appraisal by their recipients create second-order self-conscious emotions of Pride and Shame, the emotional glue to social structure (Scheff, 1985).

Fessler's account of first-order emotions, emotions evoked by structural relations between people, can help to further reveal emotion dynamics of Habermas' reciprocal modes. Proximity towards Alter (the y-axis in **Fig. 16.2**) involves the Sociality dimension, either Affection or Hostility, matching the Cooperative - Conflict dimensions of **Fig. 27.7**, respectively. By taking each of the pairings of the hypothetical logic of Habermas' four reciprocities with Kemper's four variables of Socialization, it becomes possible to reconstruct the possible dynamics of restructuring action from the pre-conventional to conventional, which requires understanding the emotion dynamics of second order emotions. Habermas, however, only outlines the dynamics of the initial restructuring of pre-conventional competitive behavior into strategic action (Case 4), which leaves the task to this study guided by Emotion theory.

#### **Case (4): Symmetrical Conflict - Learning to Control Aggression (Own Power)**

Overcoming interest-governed symmetrical conflict occurs in the case when the child competes with a peer where power is distributed equally, yet, for it to be competitive, their impact upon one another must be reciprocal (Habermas, 1990: 148). Thus, the symmetrical conflict between Ego and Alter in the form of Equality Matching (EM) tit-for-tat alternate, which when employing deception, means making (bogus) status claims.

In relation to **Fig 16.2**, this relates to the situation of Hostility (Conflict) where Alter's rank is inferior to Ego (through Ego's Status claims). Claiming Status advantage over another creates subtle emotion dynamics that result in the negatively other-directed emotional signal of Contempt being directed towards Alter when Ego claims advantage, and vice versa when roles reverse. When Ego feels the contempt from Status Disadvantage, it triggers a second, often unseen and unattended hurt in Ego, the second order emotion Shame (Fessler, 1999). However, this information can be gleaned by Ego to be directed towards Strategic purposes. Ego's recognition of the unpleasantness of Status Disadvantage and the experience of receiving Contempt can inform about Alter as well from Ego's displays, which when grasped, leads to an observer perspective on the I-Thou system.

Learning to give and love, then, involves using this knowledge to adjust one's behavior such that

instead of Status Advantage behavior involving status claims, one overcomes competition for Status by giving instead of claiming. The key is Ego's recognition that Alter's emotion display refers back to an evaluation of Ego's competitive tit-for-tat status claim. This induces an other-evaluative emotion from Alter, which triggers Ego's felt emotion and the construction of a self-evaluative second-order emotion from Alter's emotion, creating a binocular perspectival emotional "vision" that leads to gaining an observer point of view of the dyad. The switch to conferring Status and giving rather than making status claims would result in a different set of emotions, such as showing Admiration to Alter, again a first order emotion that produces Pride in Alter. By learning to give voluntary compliant accord instead of claiming, it changes the competition to cooperation, which makes more likely the other will reciprocate status-accord.

Importantly, the recognition of second order self-evaluative emotion from Alter's display, gaining a higher order perspective, allows for Ego to see Alter as the Subject. The discovery of an observational perspective to the interaction in which both of the dyad are subjects with interchangeable roles and experiencing second-order emotions affects the other three Cases, which similarly involve recognizing self-conscious emotions through adopting an observer perspective, although the other cases "cannot be adapted quite so economically to the conventional stage of interaction" (Habermas, 1990: 150).

### **Case (2): Complementary Cooperation - Learning to Control Aggression (Own Power)**

The reconstruction of interest-governed conflict results in a new observer perspective, which can then be applied to viewing other's obeying norms of expectations. Still at the preconventional level, complementary compliance is still to concrete Authority persons, whose exercise of compliance through reward and punishment force cooperation. The task to transform compliance from the "imperative arbitrary will of a dominant figure" into the "authority of a suprapersonal will detached from this specific person" requires using the new Observer perspective (Habermas 1990, 153). Through observation of others and "assimilating the attitudes of others internally" allows the child "independence from this specific authority" and in the shared behavior with others compliance "to a combined will delegated to a generalized social-behavioral expectation" (Habermas 1990, 154). By playing by the social roles then as members of the group they are entitled to expect certain actions and obligated to fulfill the justified behavioral expectations of the group.

This recasts behaving to expectations and controlling one's own power not because of the complementary power differential between Ego and the concrete person's Authority and sanction, but to a cooperative form in which control over one's behavior becomes internalized by Ego as though the "sanctions of the group are one's own sanctions" and "the concept of role behavior is transformed into that of norm-guided behavior" (Habermas 1990, 156).

The reconstruction of Authority-governed cooperation to a conventional level requires Ego to control behavior via internally imposed sanctions rather than tied to an authority. Via the new Observer perspective, Ego can see the effect of Ego's own actions of not fulfilling justified expectations from this other perspective, breaking the obligation to others. This requires recognizing that Alter (or the suprapersonal generalized other) would feel Anger and resentment from Ego's use of power in gaining complementary rewards without meeting expectations. The self-recognition of this failure of obligation producing resentment in Alter produces a second order self-conscious emotion of Guilt. When that Guilt becomes an internal sanction generated from the recognition of its affect on the group, the use self-control becomes norm-governed.

### **Case (1): Complementary Conflict - Learning to be Autonomous (Other's Power)**

The reconstruction of authority-governed cooperation to the conventional level allows for the "formation of the basic socio-cognitive structures that guide normatively regulated action" (Habermas, 1990: 158). This allows the "Social world of legitimately ordered interpersonal relations to take shape," which affects the role of the concrete Authority figure in conflict. Complementary conflict arises when actions towards autonomy require using power, which change structural relations with the concrete Authority figure.

However, power imbalance produces dependence (Kemper, 1978), and learning to break away from dependence relies not only on Ego's effort, but also upon the strategies of Alter, whose control of their own Power may not be strong and could necessitate competent defensive skills ranging from emotional to physical safety needs. "The generalized cultivation of competence over a broad range of activities becomes a first line of defense against the kind of dependence that leads potentially to control by other, but is insufficient without the development of a strong motive for Autonomy" (Kemper, 1978: 272). It also provides self-reliance so that Ego can fall back on resources outside the dependent relationship. However, the Autonomy must not be so absolute that it cuts Ego

off from the interdependence on others in relationship, so that Ego becomes an “atomistic individual” (Kemper, 1978: 273).

This requires of Ego to use the Observer perspective in viewing others instrumental use of Power to gain autonomy within the legitimate ordered normative world. The interactional structures in a power disadvantage, while consistent and effective, produce emotion like Anger when not receiving rewards despite feeling Generous giving deference to the adult. However, now the concrete Authority has been superseded by an internal Authority which sanctions bad behavior. That same internal authority of Ego can now view Authority not simply as a social control against behavior, but one legitimately bound to generalized obligations to the group or justified expectations of others. The new internal Authority balances respecting obligations to the group while developing autonomous exceptions for Ego’s own self.

The emotional hurdle becomes recognizing that Envy for those autonomous can be recast as an engine using power constructively towards once goals of earning rewards.

### **Case (3): Symmetrical Cooperation - Learning to be Competent and Achieving (Own Status)**

Competence and achievement in the division of labor earns status (Kemper, 1978: 274).

“A norm confirmative attitude and its generated perspective are generated” (Habermas, 1990: 158).

When Complementary conflict is recast to its conventional norm governed form...

Learning to be competent and achieving requires coordinating symmetrical cooperation by balancing the interactional exchanges between the dyad so they are both consistently positive for both parties and using reparative measures when they are negative. In relation to **Fig 16.2**, this relates to the situation of Affection (Cooperation) where Ego places Alter’s rank as Superior (shows deference to). Previous to Case (4), symmetrical cooperation compared the distributions of expectations and sanctions, producing Proud and Joy distributional emotion categories according to the PSToE’s classification.

However, from Alter's point of view, this show of deference resembles an other focused emotion of Admiration. The recognition of Alter's display of Admiration reflects the matching of interactional giving and receiving creates a new second order emotion. Rather than comparing the distribution between Ego and Alter, the recognition of the symmetry and reflectivity of positive cooperation results in Elevation from recognizing Pride in Alter and experiencing it together, producing shared sense of Pride in their mutual respect. These two effects of a reformulated symmetrical cooperation result in Love emotion for the shared relationship.

The interactional emotion categories generated by positive combinations of Ego's meeting expectations coordinated with giving Alter rewards, as well as the reverse, receiving rewards coordinated with Alter's meeting expectations, provides an important relationship maintenance dynamic. The currencies of exchange are symbolic and coordinated through affect. The imbalance of the social exchange of affect leads to negative emotions and a reduction of the social bond. The comparison of Ego and Alter's reciprocal contribution to the interaction (PSToE's Interactional diagonal dimension) can create apparent imbalances in the amount or degree of Generosity Ego gives or receives, or the amount of Gratitude for rewards expressed or received. The intensity of those emotions influence the degree of emotional disturbance it may cause and the implicit reaction it may provoke. The practice of a measured, reflective response leads to a proportional social emotional dynamic, which helps partners in relationship manage their equity and deepen their emotional investment through actions which reinforce the social bond. The ratio of the comparison between giving and receiving can be compared between the partners, which help to regulate the health and deepen the social integration of the dyad. And since the PSToE's model scales to the macro, these are dynamics which hold at the group level, although they require the integration of balanced person focus and emotional competencies from the individuals whom comprise the group. For it is within and between the mind bodies of individuals in which this social emotional symbolic system resides.

Achieving is the graded gaining in competence (Kemper, 1978: 275), which leads to the idea of proportionality or the graded use of matching interaction dimensions.

## CHAPTER TWENTY-EIGHT

### Sustainability, Intentional Change & Cultural Evolution

*“Left unmanaged, evolutionary processes often take us where we would prefer not to go. The only solution to this problem is to become wise managers of evolutionary processes.”*  
*Wilson et al (2014: 396)*

Climate Change is presented as an issue that could potentially challenge humanity’s ability to survive without severe consequences to life, liberty and the pursuit of happiness. Climate Change is compared to other “extinction events” in which drastic environmental changes occurred which saw the loss of species due to their inability to quickly adapt to new environmental niches. The viability of future generations, not only of humanity but also of the vast biodiversity across the globe upon all rely, is threatened by Climate Change and relies on the wise stewardship of these resources.

The implementation of effective global programs to address this most serious challenge of Climate Change depends on voluntary compliance from all parties (Leal-Arcas & Morelli, 2018), meaning each country voluntarily agrees to determine their level of participation and agrees to meet that commitment. Bad faith action from any individual member, such as the example of the US withdrawal from the 2015 Paris Agreement, seriously threatens the solution to the tragedy of the commons (Druzin, 2016). However, the 2015 Paris Climate Agreement was designed to be resilient to bad faith actions by actors, even prominent signatories such as the US, through important aspects of International Law (Leal-Arcas & Morelli, 2018).

Compliance Theory in International Law regarding treaties such as the Paris Climate Agreement accounts for various types of compliance that result from different motivations, ranging from “treaty-induced” compliance which is coerced by the treaty to coincidental non-intentional compliance (Leal-Arcas & Morelli, 2018). Non-compliance may come from valid “good faith” attempts, which are not punished, while intentional non-compliance through deliberate acts or withdrawal are problematic for the treaty as a whole unless certain resilient features are present. However, even intentional non-

compliance through unilateral withdrawal does not relieve nations from the commitments to multilateral global agreements, such as the Paris Climate Agreement. Mandatory multilateralism as a principle in International Law would require that all nations “remain subject to norms that prohibit them from adopting measures or positions that undermine the efforts of other states to develop an equitable multilateral framework...(and) subject to the obligation to continue to pursue good faith efforts to reach a mutually acceptable outcome” (Criddle & Fox-Decent, 2019: 53).

Mandatory multilateralism requires compliance to the “procedural requirements of investigation, consultation, and good faith negotiation or third-party dispute resolution” as well as “refrain from taking steps that would irreversibly alter the status quo” or “avoid actions that could undermine international peace and security in the region” (Criddle & Fox-Decent, 2019: 48-49). China’s pursuit of their national interest and security in a unilateral rejection of international law over maritime rights in the South China Sea is also subject to mandatory multilateralism (Criddle & Fox-Decent, 2019). So too was the United States’ unilateral precedent of pursuing security and national interest through its 2003 invasion of Iraq under the false pretenses of weapons of mass destruction (Center for Public Integrity, 2014). The standards of International Law the United States was so instrumental in helping to erect after the end of WWII still apply to all nations, even in lieu of their intentional non-compliance.

Nation-state pursuits of self-interest in lieu of coordinated global cooperation cannot provide solutions to problems global in scope, or so called common-pool resource problems (Ostrom, 1990). Only cooperation from the full set of global actors will lead to favorable outcomes in lieu of global governance authorities (Druzin, 2016). Without a global governing body to manage disputes and access to scarce resources, the exploitation of resources through national or corporate self-interest results in a tragedy of the commons (Ostrom, 1990).

Solutions to problems at the global scale, including treaties such as the Paris Agreement, directly relate to the Prisoner’s Dilemma (PD) and game theory, in which cooperative altruism between actors represents the best strategy for the group, while individual success is maximized by defection (McElreath & Boyd, 2007). The dilemma comes from determining whether to maximize one’s individual fitness or cooperate with the group. The cost of cooperation, defined philosophically, is in the missed opportunity for gaining resources that are limited when other actors will defect and



pursue their own self-interest, thereby threatening future access to the resource for all those not defecting. Druzin (2016) points to the source of the problem being the inability for global participants to effectively signal their cooperativeness, leading to a race to the bottom, as all actors assume the others will cheat and all pursue self-interest in consuming the common-pool resource to create the “tragedy of the commons” (Ostrom, 1990).

Ostrom (1990) offers a solution to the Tragedy of the Commons, one based in decades of research of the management of common-pool resources (CPRs) across the globe ranging from the management of forests, fisheries, coastline, etc. Examining wise and bad strategies across a number of case studies, Ostrom identified a set of best practices from successful CPR Management self-governance titled the Core Principles for Management of common-pool resources (CPR), for which Ostrom received the Nobel Prize in Economics in 2009. Ostrom offers a theory of constructing institutions for governing CPRs meant to get cooperative buy-in from all actors involved, not simply in adopting the principles, but actively participating in their upkeep, decision making and practice that provides transparency and fairness to all (Ostrom, 1990). Further case studies since Ostrom (1990) provides “empirical evidence of the efficacy of the core design principles” (Wilson, 2015: 11).

## **Eight Core Design Principles of Common-Pool Resource Management**

- 1. Strong Group Identity and Understanding of Purpose**  
The identity of the group, the boundaries of the shared resource, and the need to manage the resource must be clearly delineated.
- 2. Proportional Equivalence between benefits and costs**  
Members of the group must negotiate a system that rewards members for their contributions. High status must be earned. Unfair inequality poisons the collective effort.
- 3. Collective-choice Arrangements**  
People hate being told what to do but will work hard for group goals to which they have agreed. Decision-making should be by consensus or another process that group members think is fair.
- 4. Monitoring**  
A commons is inherently vulnerable to free-riding and active exploitation. Unless these undermining strategies can be detected at relatively low cost by norm-abiding members of the group, the tragedy of the commons will occur.
- 5. Graduated Sanctions**  
Transgressions need not require heavy handed punishment, at least initially. Often gossip or a gentle reminder is sufficient, but more severe forms of punishment must also be waiting in the wings when necessary.
- 6. Conflict Resolution Mechanisms**  
It must be possible to resolve conflict quickly and in ways that group members perceive as fair.
- 7. Minimal Recognition of Rights to Organize**  
Groups must have the authority to conduct their own affairs. Externally imposed rules are unlikely to be adapted to local circumstance and violate rule #3.
- 8. Polycentric Governance**  
Every sphere of activity has an optimal scale. Large scale governance requires finding the optimal scale for each sphere of activity and appropriately coordinating the activities.

**Fig. 28.1** - Core Principles for Management of Common-Pool Resources (CPR) - *Source: Ostrom (1990)*

Successful management of common-pool resources **Fig. 28.1** represents not merely a list of best practices, but a shorthand for a complete theory of analyzing institutions of governance in managed CPRs, which includes an analytic framework for gathering empirical data and analyzing institutions and actors' behaviors, sharing much in common with Affect Control Theory's social action scripts and Goffman's Frame Theory (cf Ostrom, 2010). Understanding behavior of organizations in complex economic and political environments requires integrating situational information as well as attitudes of those involved, as well as influence of outcomes on future behavior (learning). Ostrom's Core Design Principles provide a basis for designing the structure of groups to operate more cooperatively and adaptively (Wilson et al., 2014). These are included in the economic analytic tools beyond the

present scope of this study, but requiring further study and integration with analysis of meaning and emotion.

The similarity of the Core Design Principles with successful strategies of multilevel selection, an often neglected and still controversial aspect of evolutionary theory, is noted by evolutionary theorists (Wilson, 2015). Multi-level selection is not widely accepted largely due to stasis within the relevant academic fields that are resistant to flavors of evolution different from the modern synthesis of genetic inheritance system through gene mutation. Yet, genetic evolution represents only one inheritance system, as other inheritance systems have been found to undergo natural selection via epigenetic, behavioral and symbolic variation (Jablonka & Lamb, 2005), so theoretically and practically, evolution can occur at multiple levels and across different mediums not strictly limited to DNA. Darwin's theory of natural selection posited that descent with modification describes the general paradigm in which any system that displays Variation, Selection and Replication can be transformed by natural selection.

However, human evolution through cultural evolution has largely remained focused upon theories of cooperation tied solely to genetic evolution. Attempts to explain the evolution of social behavior has yielded several different evolutionary accounts of the mechanisms of social adaptation, all centered around explanation for how cooperation emerges in group living. Morality-as-Cooperation (MAC) (cf Curry *et al.*, 2019b) provides a ready list of evolutionary theories of social adaptation in its search for the foundations of cooperation. MAC focuses on theories representing different game theoretic strategies for acting cooperatively: Kin Selection (Hamilton, 1963); Coordination to mutual advantage (Lewis, 1969); Reciprocal Altruism (Trivers, 1971); as well as Rank dominance (Maynard Smith & Price, 1973) and Possession (Gintis, 2007). What each of these theories have in common is a focus upon an individualistic explanation of cooperation with the individual as the unit of selection, entirely focused on the genetic inheritance system and genealogical relatedness (Sober & Wilson, 1998). Selfish Gene Theory represents yet another evolutionary theory of human behavior that goes even further, positing the individual is simply a collection of genes selfishly trying to replicate (Sober & Wilson, 1998), although according to its author Dawkins, self genes could just as easily been posed as an "altruistic" gene theory when he states: "Emphasize 'selfish' and you will think the book is about selfishness, whereas, if anything, it devotes more attention to altruism" (Dawkins, 2006: viii).

In opposition to the individualist focus, Multilevel Selection Theory is an evolutionarily based theory that defines cooperation in terms of fitness differences within and between groups, where groups represent the unit of selection. Group selection was first envisioned by Darwin (1871), although largely in passing, as he was trying to first establish a general theory of evolution decades before the inheritance mechanism, Mendelian genetics, was discovered. However, early mischaracterizations of evolutionary theory applied to humans via Social Darwinism and Eugenics fueled harmful, racist policies within traditionally liberal American and British Society, as well as the racist genocides by reactionary Nazi Germany. Those miserable state policies largely tarnished any attempts of studying human evolution within the academy for several generations. However, the proliferation of cognitive sciences combined with the progress of evolutionary theory, has lead to new synthesis that reestablishes Group and multi-level selection in firm territory (Wilson, 2015).

Cultural evolution doesn't rely upon genealogical relatedness, but rather upon Assortive Interactions (Sober & Wilson, 1998), where members within a population engage altruistically with one another as a continuous behavioral/motivational trait (altruistic disposition), rather than one defined by a genetic mutation that must survive and be passed down through reproduction. The key is that altruistic individuals have cognitive and affective ability to detect good cooperators and associate with them to improve the fitness of the group, and those adaptive behaviors adopted by the group can act as a constraint on selection (Sober & Wilson, 1998). Increasing assortive interactions through improving cooperativeness can occur by combating pathogenic beliefs by normalizing a constellation of cognitive behavioral practices that represent evolutionary change at the level of individuals.

Societal acceptance of Evolution in general, and human cultural evolution in particular, remain stonewalled and limited by a spectrum of opposition running from conservative to liberal in such forms as religious opposition to scientific enlightenment principles, apprehension to past misapplications of Darwinian theory in misguided programs of Social Darwinism and Eugenics, guarding of theoretical programs threatened by a new model, all forces which limit the expansion of multi-level selection as a new dominant paradigm (Kuhn, 1971). However, what has recently become theoretically clear and may now be considered fact is that Cultural Evolution specifically, and multi-level selection generally, is settled science (Wilson, 2015). Evolutionary forces work upon many different scales and within many different systems, of which the dominant paradigm of genetic

evolution may be considered only one domain, while others have become well studied and verified within Immunology, Social Learning, and even the human language system itself (Jablonka & Lamb, 2005).

The unravelling of the mystery underneath genetic evolution was preceded by decades of theory in which evolutionary theory became established, yet the proximal causes were yet unknown until the discovery of DNA and all that has followed since. Yet, from Darwin's original work, another level of evolutionary forces operating above the level of individual replication at the level of groups was predicted, only to fall out of favor, much like research in Emotions, until the latter part of the twentieth century. Eventually, limitations of the behaviorist and cognitivist models led to the return of focus upon emotion, while at much the same time researchers and theories sought placement of human group level teleological forces within the framework of evolutionary theory. The mathematical tools used to analyze genetic evolution were generalized to multiple levels (Richerson & , 1985), with a consensus building upon a generalized theory that natural selection occurs within any system displaying descent with modification and variability of outcome, which over time will exhibit differing survival rates that will favor some "traits" while disfavoring others. The reintegration of the human experience within evolutionary theory is important, for humans have tremendous responsibility of both producing the structural problems which now threaten the physical and social environments globally, requiring a global cooperative effort to stave off certain anticipated environmental degradation without wise directed management of group level coordination at every level.

Deacon (2011) attempts to explain what complexity theory alone is not able to explain about emergence of phenomena such as consciousness. Deacon identifies constraints that are notable by their physical absence, yet still are able to influence and limit the direction and outcome of action. Like the hub of a spoked wheel enabling the wheel to turn, the hole in the center is the key constraint; only, with respect to complex phenomena like consciousness, these physically absent constraints are things such as goals, desires, beliefs, while affects, the experience of feeling, bridge that gap, which like words on the page influence action through physical processes from which we extract symbolic meaning. These non-ontological constraints are detached from the physical world through symbolic reference, which can refer to things or events which have never existed, or which one desires to exist, and in this way, human teleology is realized in the values and motivations which drive action and

meaning. Amplified to the level of human civilization, teleological process can be harnessed if we become collectively aware of not just them, but of our own collective awareness itself.

The constraints of complex systems produced through symbolic reference and self-reference connect levels of systems, coupling them into relationships in which the constraints of one level depend upon the constraints of the other, and vice versa (Deacon, 2012), producing hierarchically coupled control processes which chain and stack in immeasurable complexity. However, as interdisciplinary science has shown, these can be understood at various intersections between levels, theoretical constructs, and methodological practices. The level to ultimately understand the problems and solutions presently facing human are at the level of the social, from all perspective focuses at the self-, other-, and group-, levels, and ultimately at a shared supra ordinate group level, a global level.

While it is beyond the present scope of this study to provide an exact theory of the mechanism facilitating cultural evolution, it can clearly point to key components which are well known. The complex constraint at the hub of human sociality is the process of self, which animates the internal-external divide and produces the subjective, self-aware feeling of being alive. It is animated by the affects, which are the information traversing levels from the basic brain affect systems in the central midbrain through higher cortical systems, transmitted through repeated nuanced perturbations of actions, inferentially perceived through social communication, and centrally associated with meaning systems in the connotative dimensions of semantic meaning, the distal mechanism of cultural evolution which operates at a contextual information level guiding adaptive behaviors selected for at the group level. Valued behaviors by the group are communicated and coordinated across individuals, overriding individual level traits which at the level of groups, enables human systems to select behaviors providing advantage to the group over the immediate benefit of the individuals, yet increasing the prevalence of the “symbotype” producing such behaviors despite the individual disadvantage of the behavior.

The human affect system, as described by this study beginning in the Color Theory of Emotion and emanating at the highest level as shared symbolic representations of propositional content via language, is anchored in the affect system of shared connotative space, the EPA dimensions. However, the EPA dimensions are an abstraction of the processes (perceptual, motivational, emotional) which generate the bivalent functional space over which situated conceptualizations are

symbolically related to past concepts in memory from experience and social learning, used to establish antecedent probabilities towards adjustment of coordination of response selection which entails autonomic responses to situational stimuli in a predictive manner toward a valued goal. At every level, this functional system constrains the degrees of freedom of “movement” towards goals, producing a characteristic patterning according to two orthogonal dimensions over which phenomena at each level vary.

The unconscious, neurophysiological systems processing perceptual information from three realms (intero-, extero-, and altero-) (Panksepp, 1998) formulate predictive mechanistic changes according to an attentional schema attenuated upon salient perceptual information (Graziano & Kastner, 2011), comparing to memory of past situated conceptualizations (Barrett, 2017), allowing for operationalization of autonomic adjustment via emotion subsystems (Porges, 2007) in production of external changes readying for the moment, accompanied by internally interpretable and externally broadcast affective signals, allowing for communication of contextual, symbolic understanding of the present moment (Blumer, 1969)(Heise, 1975)(Kemper, 1978). The symbolic meaning within this affective medium becomes simultaneously available for interpretation at multiple ontological levels according to the particular perspective taken (Wiley, 1992), whether that be internally subjective, internally intersubjective, or externally objectively observed or experienced, the four ontological levels of the psychological, interpersonal, social, and cultural produced from the two universal dimensions of Collectivism-Individualism & Internal-External. Semiotic processing of moment to moment affective images (Damasio, 2010) or emotion frames (Craig, 2007) allow for associative linkage between representations and a scaffolding of meaning aligning non-conceptual, conceptual, and propositional representations (Schlicht, 2009), which balance the self-construal process differentiating between interdependence and independence (Markus & Kitayama, 1991). It is this last process, at the top of the hierarchical stack of control processes, which balances the needs of the individual and the collective in the context of social actors enforcing tightness or tolerating looseness (Gelfand *et al.*, 2006).

The self is the emergent property of the human social system steering the individual's complex system back to social allostasis given perturbations occurring at the social level using affect and meaning systems to coordinate action. In this sense, cultural meaning systems provide constraints which interface with the self at precisely the level of self-construal, where meaning through semantic

language connotatively felt may influence propositional self-representations which guide and help to reset action towards values and goals.

Interdependent and Independent self-construal represent the apogee of self-meanings within the context of intersubjectivity and self-directed subjectivity, essentially subjective analogues to cultural constructs of Collectivism and Individualism (Verweij *et al.*, 2014). In a cultural environment highly contextualized towards the intersubjective, self-construal processes can alter perception, cognition and emotion towards normative rules and desire to “fit-in” with the group, producing self meanings which are interdependent with others, changing focus towards others, either as individuals or in the case of interdependency with a collective, towards the group (Schlicht *et al.*, 2009). In cultural environments stressing independence, self-construal processes are conceived of as based upon internalized traits and dispositions under control of the individual self apart from others. They produce propositional representations of self, where semantic understanding of social roles and identities vary by culture while non-conceptual and conceptual representations are “culturally invariant” (Schlicht *et al.*, 2009).

It is that propositional self-representation that can be swayed to focus only upon the independent self, which is a consistent across cultures and considered a universal aspect of self (Markus & Kitayama, 1991). However, in many collectivist focused cultures, the interdependence between people is stressed through cultural practices, which modifies self-construal to include processes which take into account situational aspects of the social relationship that actually alter perception, cognition, and emotion. The addition of an intersubjective perspective recruits additional brain regions in processing social and emotional information that is absent subjective perspectives (Schilbach *et al.*, 2013). The selective advantage of the social emotions in guiding adaptive behavior appears stunted in independent self-construal processes focused upon ones’ traits and dispositions rather than seeing them in the context of relationship with others. The many structural emotions felt from appraisals of structural aspects of relationships are missed in self-focused attention, but salient in intersubjective contexts. This study posits the intersubjective focus is in fact the perspective which drove and continues to drive human evolution. Cultural practices which greatly promote independent self-construal process actually may threaten that culture, or in the age of global interdependence, may actually threaten the ability of humanity to adapt to rapidly changing social and environmental conditions.



The western world actually suffers in the face of extreme cultural biases towards independent focus, which affects all, not simply one political ideology, class, or party. The extreme focus of western mediated discourse upon threat and consumption affects our presence and perspective focus to one of constant vigilance against threat, or carefree hedonistic pleasure. These are in fact ideological and greatly priming independent self-construal. They also reflect the unrecognized use of power that has unintended consequences.

Thompson (1997) defines ideology as meaning in service of power, where asymmetrical relations are “used to establish and sustain relations of domination.” Ideology achieves this by controlling the production of symbolic meaning, disconnected from social interaction, separated in place and time from one’s immediate context (Thompson, 1991). However, it is the modern medium of transmission through mass communication, which provides ideology with its subtle effects. Thompson (1991) redefines ideology from its political and social origins in the light of modern mass communications, which profoundly affects the social communicational process in ways that drive cultural cognition over individual reflective reasoning. Mass communications cause a break in traditional social patterns through largely one-way communication, differing from the natural human 2-way dyadic of social communication. One-way communication leaves the recipient with restricted ways of interacting due to the medium (McCluhan, 1994), which constricts possible responses based on the limitations or characteristics of the medium. However, dyadic interaction allows engagement in responsive interplay and the forming of social bonds. And it is at the other-focused interpersonal level in which the truly universal moral dimension of no harm and helping others provide humanity with the two most powerful agents of change.

And when this one-way, communication channel constantly repeats messages of danger and fear, it has profound effects not simply upon discourse, but how we perceive and experience the world. The mediated focus upon the dangers faced at every level from the individual, to families, to communities, states, nations, and the entire earth have affects on how we perceive, talk, interact, and feel. When that system extends beyond the television in the living room to the computer required for work and the telephone required for daily interaction, it alters domains previously the province of engaged social and emotion interaction. The consumption of mediated information has achieved remarkable penetration of the “Lifeworld” (Habermas, 1991), as the massive proliferation of

ideologically driven entertainment has increased by several orders of magnitude in online, on-demand content delivery, as well as 24/7 corporate “News” coverage. This new environmental/situational influence upon human communication significantly differs from the **Environment of Evolutionary Adaptedness (EEA)** (Tooby & Cosmides, 1990) which honed human psychology and sociality in ways which proved adaptive in past environs.

*“Human social interactions among unrelated individuals are anything but random, and our ability to learn and to change our behavior according to what we learn provide a powerful mechanism for the evolution of altruism and other group-advantageous behaviors...*

*Sanctions for normative behavior in the form of rewards and punishment can be seen as secondary behaviors which require group-selection to evolve with respect to group fitness.”*

*Sober & Wilson (1998: 142, 149)*

A “science of positive behavioral and cultural change” is needed, one in which intentional phenotypic change is made possible by the open-ended flexibility of “human behavior and culture” operating in the short term (D.S. Wilson *et al*, 2013). Such sciences exist, which resolves the dilemma between Evolutionary Psychology and Cultural Evolution’s theories of human behavior. While Evolutionary Psychology posits the past-oriented, fixed, instinctual “evoked” culture typifies much human behavior (Tooby & Cosmides, 1990), Cultural Evolutionists argue that much of human behavior is shaped through open-ended, culturally transmitted “culture” that allows for great plasticity (D.S. Wilson *et al*, 2013).

Those sharing a language and a culture align the connotative meaning of concepts to similar positions in EPA space, where concepts are situationally defined and valued culturally. Much of our affective sentiments are shaped by cultural norms, accounting for much of the conservation of sentiment change, as they most strongly influence Evaluations, although there is some individual variation, with slightly more for Potency and Activity (Heise, 2006). Within individuals, EPA ratings are resistant to change, with Evaluations and Potency estimates remaining very stable over decades, while estimates of Activity change as we grow older (Heise, 2006). Culturally, the rate of change is even slower, as cultural concepts shift in affective space on or the order of one tenth of one percent per year, meaning “the overall culture is nearly static!” (Heise, 2006: 16).

Thus, the slow pace of cultural change is due to the overly complex symbolic relation of affective meaning between all concepts through embodied language, interpreted through social affective signals, and coordinated through social communication. Social information taken in are cast and situated in these affective dimensions, making concepts in relation to self. When processed by the Social Engagement System, connotative affects introduce tiny perturbations and contributions to body states for the preparation of the body and mind in predicting the needs of the next instant based upon salient concepts being processed. The differential success of various forms of concepts shared among people produce cultural level forces upon which natural selection can and does act. The cultural schemas adopted as cultural selves, those accompanied by emotionally arousing experiences, oftentimes from childhood (Quinn & Matthews, 2016), become part of one's autobiographical self continually constructed and revised in order to make sense of one's experiences.

This system is the basis of the cultural symbotype (Wilson *et al.*, 2014).

*“Social scientists (Abraham Maslow, Lawrence Kohlberg, Jane Loevinger, and James Fowler) describe a dialectical motion between **differentiation** and **integration**, between turning attuning inward and then outward, between valuing the self and then the larger community. It is not a circular motion that returns to where one started, but rather, it resembles an ascending spiral, where concern for the self becomes steadily qualified by less selfish goals, and concern for others becomes individualistic and personally meaningful.”*  
Czikszentmihalyi (1993: 235)

Great changes in epochs are spurred by innovation from society under pressures and crisis which cannot be solved with previous forms of knowledge. As the social system comes under extreme stress from social, environmental and political instability, new practices, technologies and social forms emerge which are adopted, by what is now called, “early adopters.” New cultural perspectives emerge when existence is threatened, through the hard work of creative individuals and organizations which lead innovation and forward thinking apart from traditional industry or convention. This is the process of evolutionary social change, a process which is always ongoing and which at this time, provides a reason for hope. For it is this moment which humankind is undergoing a radical world systems change. The conflict across the world represents many different

embodiments of the world in individuals reacting to the anxiety and stresses produced by social change.

A theory called Spiral Dynamics, envisioned by psychologist Clare Graves, uses the generalized concept of Meme to explain the dynamics of how human groups differentiate according to a hierarchical typing that has evolved across human evolutionary history. The model offered by Graves describes cyclical patterns in human history that have seen a forward differentiation of cultural memes which expand the cultural-behavioral repertoire, followed by times of contraction and consolidation during crisis, whereupon new thinking and behaviors are integrated back into previous stages leading to innovation and new growth. The circle doesn't end up back where it started but advances in an ascending spiral, as human cultural progress results in new levels of organization and cultural complexes at higher levels. Spiral Dynamics envisions this flow and ebb to have occurred a number of times, striating human cultural forms into large bands, which Spiral Dynamics call ~MEME, for values-attracting meta meme. These are aggregates of shared beliefs which influence behavior, essentially what this study attributes as Cultural Worldviews.

Spiral Dynamics posits these large scale cultural meaning systems pattern as recognizable bands which are related hierarchically, where new cultural practices provide innovation which over time leads to reordering of the dominant practices and a scaling upward of cultural levels, in an almost teleological sense.

### Spiral Dynamics

Tier	Levels	~MEME	Emergence	Basic Concerns	Basic Motives	Worldview
2 <sup>nd</sup>	TURQUOISE	Holistic	30 years ago	Life & Harmony	Attention to whole-Earth dynamics & macro-level actions	Holistic
2 <sup>nd</sup>	YELLOW	Integrative	50 years ago	Flexibility & Natural Flows	Flexible adaptation to change through Connected, big-picture views	Integral
1 <sup>st</sup>	GREEN	Communitarian / Egalitarian	150 years ago	Equality & Community	Well-being of people & building Consensus get highest priority	Egalitarian
1 <sup>st</sup>	ORANGE	Achievist / Strategic	300 years ago	Authority & Manipulation	Possibility thinking: focused on Making things better for self	Individualist
1 <sup>st</sup>	BLUE	Purposeful / Authoritarian	5,000 years ago	Meaning & Order	Absolute belief in one right way & Obedience to authority	Hierarchist
1 <sup>st</sup>	RED	Impulsive / Egocentric	10,000 years ago	Dominance & Power	Enforce power over self, others, & Nature through exploitive independence	Fatalist
1 <sup>st</sup>	PURPLE	Magical / Animistic	50,000 years ago	Safety	Blood relationships & mysticism In a magical & scary world	Tribalistic
1 <sup>st</sup>	BEIGE	Instinctive / Survivalistic	100,000 years ago	Survival	Staying alive through innate Sensory equipment	Automatic

**Fig. 28.2** - Spiral Dynamics Levels - *Source: Beck & Cowan (2006)*

Spiral Dynamics identifies the different cultural patterns by colors in **Fig. 28.2** and traces their emergence in human history due to their success for the times and conditions which helped civilization grow and advance. The emergence of new cultural forms has vastly accelerated over recorded human history, as the increase in the number of interactions and information exchange between persons increases the change rate of perspectives. The major epochs we recognize by customs complexes, technological innovations, transportation and communication, or social movements cause changes to patterns of behavior (and thus social institutions), increasing opportunities to come into contact with new ideas and grow perspective. Yet, the conflict new cultural forms create can mark those epochs, for with change come resistance to challenges to embodied beliefs, set behaviors and traditional forms of life.

While the details of Spiral Dynamics is beyond the scope of this study, its integration into Wilber's Integral Theory necessitates mentioning a key component of SDi, namely its identification of Person Perspective in relation to speaker perspective (first-, second-, third-person, plus higher fourth-, fifth-, and sixth-, etc) as being the key difference between levels (Wilber, 2000a). While the characterization of perspective taking levels is generalized, it assumes that social-cognitive perspectives are the key driver in differentiating cultural patterning. It does not easily explain why a fifth-person perspective is necessarily integral rather than fourth or sixth, and analysis of socio-emotional processing is negligible.

Instead, this study counters that Spiral Dynamic Levels must differentiate based upon different valuations of Social Emotional moral perspectives. Rather than differentiation between levels cast as social-cognitive person perspectives, this study posits they are embedded in social-emotional regulation typified by a prototype categorization of the combined Moral Motivations Model from **Fig. 26.13**. This study contends the beliefs and behaviors at every level are constrained by Self-, Other-, and Group-focused perspectives for both Proscriptive and Prescriptive regulation of emotion. Individuals engage in social thought and social action that value each of the Moral Motivational cells to different degrees for given certain contexts influenced by psychological, social, and cultural "habits." However, it is the Social Engagement System (SES), of which this study has outlined across all levels which most influences the patterning of MMM valuation, which is most constrained by the

functional and structural neurophysiological reality within each individual, in how they have embodied the world. Most importantly, this functional and structural neurophysiological reality is not an unchangeable, essentialist reality but one which is able to change through cognitive behavioral learning, which in itself is an evolutionary advance which humans can utilize.

The elaboration of the emergence of Levels and their interactive dynamics upon world history seems more of “just-so stories” which organize historical political history, very much western centric, lacking a true analytic foundation embedded in human experiential meaning to be able to discern true epoch changing dynamics. However, the advantage of tying the discernment of Spiral ~MEMEs to moral motivations allows for the correlation with analytics discussed in the last several chapters and throughout this study, organized by the MMM, spanning all ontological levels. Thus, from the neurophysiological to the psychological to the interpersonal to the social and cultural, analytics from all levels can help to paint the mosaic not only of the dominant cultural worldview, but of the constellation of motivations embedded in meaning systems left in the historical record. The above Spiral Dynamic Levels (**Fig. 28.2**) re-conceived as cultural prototypes of Moral Motives could be as follows:

**Spiral Dynamics - Moral Motives**

<b>Tier</b>	<b>Levels</b>	<b>MEME</b>	<b>Emergence</b>	<b>Cooperative Strategy</b>	<b>Moral Motive</b>
2 <sup>nd</sup>	TURQUOISE	Holistic	30 years ago	Universalism	MMM Universal
2 <sup>nd</sup>	YELLOW	Integrative	50 years ago	Balanced Regulation	MMM Balanced
1 <sup>st</sup>	GREEN	Communitarian / Egalitarian	150 years ago	Reciprocity & Fairness	Social Justice
1 <sup>st</sup>	ORANGE	Achievist / Strategic	300 years ago	Liberty	Self-Reliance
1 <sup>st</sup>	BLUE	Purposeful / Authoritarian	5,000 years ago	Deference & Heroism	Social Order
1 <sup>st</sup>	RED	Impulsive / Egocentric	10,000 years ago	Possession	Enable Altruism
1 <sup>st</sup>	PURPLE	Magical / Animistic	50,000 years ago	Kinship	Contain Self-Interest
1 <sup>st</sup>	BEIGE	Instinctive / Survivalistic	100,000 years ago	Purity	Self-Restraint

**Fig. 28.3 - Spiral Dynamics & Moral Motivations**

Rather than dynamic spiral levels hierarchically arranged by person perspective, **Fig. 28.3** offers a

Spiral Dynamics in which “levels” are different by having a center of gravity towards one particular Moral Motive. In this model, dynamical levels instead represent either proscriptive or prescriptive motivational focuses around which culture changes in order to solve a challenges to the present order for which it is unable to solve. While the dynamics explained between cultural “MEME” would be similar, as well as the historical positioning of ebb and flow transitions, rather than seen as hierarchical the “MEMEs” could be seen as complementary as in checks and balances. As problems with a current system become evident, a new motivational regulatory mechanism is required to solve a problem of society. Its success and acceptance gradually change the moral center of gravity until new problems arise for which the dominant cultural mode is ill-equipped. The second tier transition to an Integral YELLOW tier then would be one which integrates and balances each of the moral motivations. The transition to the TURQUOISE tier would be occur as balanced moral regulation is applied universally, rather than towards ingroup or human-centric.

The positioning of the Moral Motives to Spiral Dynamic “MEMEs” is hypothetical, although based on logic related to a recapitulation of phylogenic development of the individual during socialization (cf Kohlberg, 1971), with some caveats. First would be twice listing Self-Reliance motivations, initially during the RED as one focused on possession, as moral motivations regarding ownership and land possession must have been salient during the advent and change from gathering to agrarian production, one which eclipsed the earlier Self-Interest containment strategy in kinship sized groups. The second during the ORANGE focuses upon liberty as a response to the oppressiveness of traditional social orders like Monarchy which imposed submission and prevented economic self-interest. That in turn had lead to crises of unconstrained economic self-interests leading to GREEN focuses on egalitarian fairness and Social Justice.

And yet, a new awareness was ushered during the 1960’s of the effects humanity has on the environment with the rise of environmentalism, reflecting a systems level awareness that reflected a genuine epochal transition to an Integrative “MEME” (Beck & Cowan, 2006). That awareness radiated outward from early environmental innovators to adopters (Rogers, 2003) who helped to instill resilience and action over the course of several generations to bring big environment issues to mainstream awareness. It takes a certain distribution of people to come to awareness of an issue before it can be adequately confronted by society, and Climate Change’s pressing urgency poses a critical problem for humanity, and all of life depending upon humanity to find a solution. It requires

humanity build new internal models to adequately spread awareness and build consensus for collective actions to help mitigate the problem, which will require thousands of simultaneous solutions from every level of society, from individuals to organizations to nations to international world organizations.

While the details of Spiral Dynamics is beyond the present scope of this study, its integration into Wilber's Integral Theory necessitates mentioning a key component of SDi, namely its identification of Person Perspective as being the key difference between levels. While the characterization of perspective taking levels is generalized, it assumes that social-cognitive perspectives are the key driver in differentiating cultural patterning. It does not easily explain why a fifth-person perspective is necessarily integral rather than fourth or sixth, and analysis of socio-emotional processing is negligible.

Instead, this study counters that Spiral Dynamic Levels must differentiate based upon different valuations of Social Emotional moral perspectives. Rather than differentiation between levels cast as social-cognitive person perspectives, this study posits they are embedded in social-emotional regulation typified by a prototype categorization of Moral Motivations from **Fig. 26.13**. Thus, the beliefs and behaviors at every level are constrained by Self-, Other-, and Group-focused perspectives for both Proscriptive and Prescriptive regulation of emotion. Various configurations of Moral regulation patterns, embedded and constrained by neurophysiological functional and structural reality, provide the necessary and sufficient differences at the cultural level to explain the patterning described by Spiral Dynamics. This still allows for theories of social and emotional evolutionary paths, but ones rooted in analytics described in this study, enabling empirical study of Integral Theory and the claims of AQAL Meta Theory.

*"It is the personality system that is the bearer of the ontogenetic learning process; and in a certain way, only social subjects can learn. But social systems, by drawing on the learning capacities of social subjects, can form new structures in order to solve steering problems that threaten their continued existence. To this extent the evolutionary learning process of societies is dependent on the competencies of the individuals that belong to them."*

*Habermas (1990: 154)*



While cultural evolution relies upon intergroup cooperation and intragroup competition for altruism to emerge, society grows as individuals in relation to each other grow socially. As the weight of humanity grows in moral development, the balance shifts culturally to higher levels, although in a ratchet effect of forward and backward movement spiraling upward.

It is this form of emotion regulation which humanity must leverage as it faces the multiple crises that are global in scope, with Sustainability in the face of global climate change the root crisis. Solving global Sustainability issues will require coordination of people, groups, organizations, and nation-states acting cooperatively across all levels, all cultures, across languages, and across continents. A group management mechanism using negative emotions to ensure group binding cannot be forced upon all people, for diversity of cultural perspective and cultural differences will lead to division in the face of threat. However, no single cultural system can hope to solve the global crises, since it requires the participation of all of humanity. And these global problems are so complex that they cannot be solved from top-down central planning or bottom-up market forces, but through some integrated combination of both or some new form that leverages cooperation across multiples levels of organization with just the right amount tightness to provide reinforcement and accountability, and enough looseness to allow for creativity and freedom.

While the modern Environmental movement focused on restoring a balance to human impact on the environment, it takes decades for cultural meaning systems expressing Integral perspectives to be transmitted by innovators to early adopters (Rogers, 2003). Over the intervening 60+ years, integral perspectives of systems of systems have emerged, especially in the race to understand the drivers of global Climate Change. However, an Integral perspective is especially needed for perhaps the most complex of systems, namely human systems and our place in natural world. Given the serious nature of Climate Change and the seemingly insurmountable chasm of practical understanding of how to overcome the human differences, which keep us from boldly joining together globally to cooperatively learn and change global direction, an Integral perspective of human behavior is sorely needed. This study is one such attempt at providing an such an integral perspective, or perhaps a template of one.

As the world recovers from the pandemic has caused, let us take a moment to stop and check ourselves. The global pandemic has been disastrous to public health among the aged and poorest

health, to the economic health of small businesses, to the mental and physical toll on health workers, and to the families suffering through economic hardship through sickness, job loss, breakdown of traditional familial patterns. The global pandemic has exposed the cracks in the pillars of modern societies, policies, media, and governance. However, it has shined a light on the effect upon emissions from transportation, showing how directly city air is polluted by individualized, consumer oriented transportation and consumption. So reliant on leisure and the imperative to consume are western markets that political leaders are willing to risk health and safety in order to perpetuate the capitalist market system at the expense of public safety. The US public's own resistance to adequately "mask up" or to strictly enforce adequate safety exposes how deeply selfish, atomistic, and individualistic western social mores have become, requiring higher levels of interdependence and tightness. Similarly, the social mores of Internet "cancel culture" and comment anonymity requires enhanced tightness as well. On the opposite side, over-punitive solutions to solve public health crises, economic crises, housing crises, mental health crises can be shown to be inadequate and require higher levels of societal looseness.

What then are we to do? What can we as individuals, families, friends, citizens, churches, schools, communities, cities, states, nations, and humanity do to change the direction we are seemingly headed?

*"Social structures emerge from individual actions as those individual actions are patterned across persons and over time. And, actors have the capacity to change social structures as well, thereby reorienting social behavior with the results that new patterns emerge. Social movements are a good example of a way that social action can mobilize social structural change, and movements such as the civil rights movement and the feminist movement have been effective in this change." Burke & Stets (2009: 35)*

The most universal of the moral motivations is containing self-interest by refraining from harm to others (Janoff-Bullman & Carnes, 2008), moral wisdom that the wisdom traditions have in common. Any public policy which violates this moral motivation, no matter the best of intentions, must be met in oppositional solidarity by the public. Many such policies are well known violations of moral motivations, since the wisdom of the crowd and public opinion can identify such violations, of which often the bottom line is argued to be more important than the financial consequences of breaking

some law or rule. For, in the pursuit of profit, companies will sacrifice standards of safety such as in their pursuit of easing environmental regulations which protect developing infants' sensitive to harmful chemicals through air, water, food, or even prenatally. So are the relaxing of energy standards of automobiles and trucks, especially in diesel and industrial equipment, which produce gasses which compound healthy problems and increase human effects on climate change.

However, some policies create secondary problems which harm others during the pursuit of trying to prevent harm. These too must be recognized for their violation of the universal motivation of no harm, the exemplar being of course war, militarization, and weapons. The public is often quite attuned to this moral violation, as in when it shows unprecedented public opposition against war before it happens, such as in the weeks before the US invasion of Iraq (Center for Public Integrity, 2014). The untold suffering brought upon mothers and children from US military policies cannot be estimated, nor is it even tracked by the US Military, nor the politicians whose failed politics led to war as the option. Security through militarization is deception and a collective strategy of Self-Enhancement and Control, representing a violation of the other five moral motivations.

Security at a national and global level requires breaking out of a 20<sup>th</sup> century mindset of using top down might to preserve right. There is far more security in cooperation, especially when that cooperation is bottom up. Policies which produce cooperation and more cooperators are necessary. Global problems will require solutions at every level, and we will need an entirely new ethic of cooperation depends upon the re-establishment of trust, not a forced sense of must. A sustainable future requires the re-establishment of interdependent social bonds and trust to promote a widening of cooperative consensus.

The moral motivation of tolerance towards others is an antidote for the outgroup exclusion that hurts others socially, which usually indicates insecurity on one's own standing in the group and use of exclusion of others to bolster one's feeling of group membership (North & Fiske, 2013). Having tolerance in engagement with others and ourselves allow for the liberty of autonomy to build our capabilities and enable the capabilities of others. We need not all have the same ideology or share the same values, have the same thoughts or share the same moral motivations in the same sense. The diversity of humanity is a strength of humanity and not a weakness, for out of diversity comes innovation and evolutionary ideas that may be important for survival. For the solutions to

the Climate Crisis will be many coming from many different cultures, voices, and languages from across the globe. We needn't all sing in the same voice, but harmonize as in a choir.

The many ways of coming to understand the social, cultural, psychological and physiological systems are intertwined, each with their own epistemological perspective, which must be seen from an integral view, to see the patterns which connect across systems. By coming to understand how in fact each of these perspectives are describing an underlying unity can we come to understand how we can consciously choose the cooperative path towards Care rather than the competitive path towards Strife. Modern society has reached an amazing point in history in which we possess enough detailed knowledges which are now being confirmed through modern science, only to confirm much of what has been known for millennia. We are bound together by our mutual desire to seek happiness and satisfaction and protection from harm, which can be found by coming together in harmony, not through armaments or through use of force. The next great turning will require us to become collectively aware of this fact through sharing connection with others.

The neural mechanism of the interoceptive affect system evolved for homeostatic energy regulation, where the right hemisphere expends energy in protecting against threat and working towards appetitive resources, while the left hemisphere conserves energy in provisioning care and recuperating whilst building reserves. Balance is required so that the mind body operates efficiently and productively in the face of whatever environmental situations are encountered. Now at the cultural level, our global homeostasis for sustainable living requires a similar symbiosis between right and left. The ideologies which drive the preservation of the Social Order and the path forward for Social Justice must be balanced, while their grip must not be too tight or too loose.

Our solutions require input from more than one cultural goal, social relational Mod, moral motivation, ideology, or cultural worldview. They must integrate all four RMs, and all six motivational sextants, and all eight integral perspectives. All share the same building blocks of the basic typology of four emerging from the variation across the Individual and the Collective crossed with the Internal and the External, rooted in the autonomic nervous system. All groups share this same human architecture and no one group or nation can solve these problems alone, for everyone is dependent on the deeply woven interdependent web of systems now global in scope. It will require a cooperative strategies honed over humanity's long evolutionary history, and perhaps new cooperative

and coordinated strategies that exist in minds just waiting to connect.

*“The Allegory of the Cave...describe(s) a group of people who have lived chained to the wall of a cave all of their lives, facing a blank wall. The people watch shadows projected on the wall from objects passing in front of a fire behind them, and give names to these shadows. The shadows are the prisoners' reality. Socrates explains how the philosopher is like a prisoner who is freed from the cave and comes to understand that the shadows on the wall are not reality at all, for he can perceive the true form of reality rather than the manufactured reality that is the shadows seen by the prisoners. The inmates of this place do not even desire to leave their prison, for they know no better life. The prisoners manage to break their bonds one day, and discover that their reality was not what they thought it was. They discovered the sun...” Wikipedia (2018)*

## **Appendix A - Emotion Taxonomy**

## Elemental Emotions

### Primary Categories

*affect*

Self Status  
Attribution

+

=

Approving of Self

Self met Expectations

Self Power  
Attribution

-

=

Disapproving of Self

Self failed to meet Expectations

Self Status  
Attribution

+

=

Happy

Self is Rewarded

Self Status  
Attribution

-

=

Sad

Self is Punished

Other Status  
Attribution

+

=

Impressed by Other

Other met Expectations

Other Power  
Attribution

-

=

Disillusioned with Other

Other failed to meet Expectations

Other Status  
Attribution

+

=

Affection towards Other

Other is Rewarded

Other Status  
Attribution

-

=

Hostility towards Other

Other is Punished

## Comparative Emotions

### Attribution Categories

Self Status Identity	+	+	=	deserving <b>Honored</b> Self High Status Identity	=	Approving of Self Happy
Self Statusless Identity	-	-	=	deserving <b>Disgraced</b> Self Low Status Identity	=	Disapproving of Self Sad
Self Power Identity	-	+	=	undeserving <b>Manipulative</b> Self High Power Identity	=	Disapproving of Self Happy
Self Powerless Identity	+	-	=	undeserving <b>Powerless</b> Self Low Power Identity	=	Approving of Self Sad
Other Status Identity	+	+	=	deserving <b>Impressed with Other</b> Other High Status Identity	=	Impressed w/ Other Affection toward Other
Other Statusless Identity	-	-	=	deserving <b>Disillusioned with Other</b> Other Low Status Identity	=	Disillusioned w/ Other Hostility toward Other
Other Power Identity	-	+	=	undeserving <b>Disgust for Other</b> Other High Power Identity	=	Disillusioned w/ Other Affection toward Other
Other Powerless Identity	+	-	=	undeserving <b>Compassion for Other</b> Other Low Power Identity	=	Impressed w/ Other Hostility toward Other



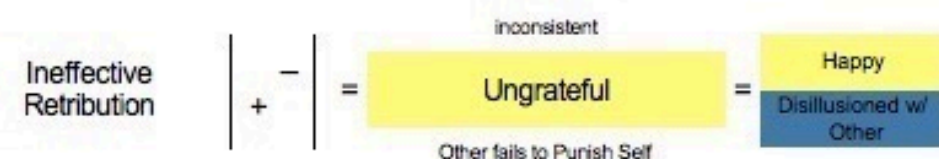
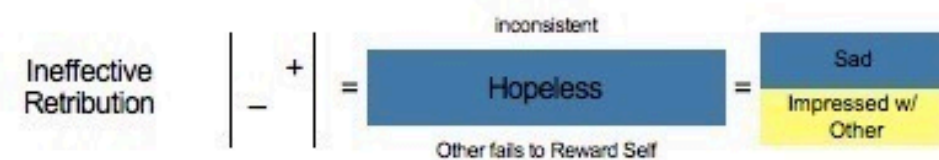
## Comparative Emotions

### Distribution Categories

High Performance Equality	$\left  \begin{array}{cc} + & + \end{array} \right $	=	<div>consistent</div> <div>Proud</div> <div>Self-Other High Performance Equality</div>	=	<div>Approving of Self</div> <div>Impressed w/ Other</div>
Low Performance Equality	$\left  \begin{array}{cc} - & - \end{array} \right $	=	<div>consistent</div> <div>Ashamed</div> <div>Self-Other Low Performance Equality</div>	=	<div>Disapproving of Self</div> <div>Disillusioned w/ Other</div>
Self Performance Advantaged	$\left  \begin{array}{cc} + & - \end{array} \right $	=	<div>inconsistent</div> <div>Superior</div> <div>Self Performance Advantaged</div>	=	<div>Approving of Self</div> <div>Disillusioned w/ Other</div>
Self Performance Disadvantaged	$\left  \begin{array}{cc} - & + \end{array} \right $	=	<div>inconsistent</div> <div>Inferior</div> <div>Self Performance Disadvantaged</div>	=	<div>Disapproving of Self</div> <div>Impressed w/ Other</div>
High Reward Equality	$\left  \begin{array}{cc} + & + \end{array} \right $	=	<div>consistent</div> <div>Joy</div> <div>Self-Other High Reward Equality</div>	=	<div>Happy</div> <div>Affection toward Other</div>
Low Reward Equality	$\left  \begin{array}{cc} - & - \end{array} \right $	=	<div>consistent</div> <div>Sorry</div> <div>Self-Other Low Reward Equality</div>	=	<div>Sad</div> <div>Hostility to Other</div>
Self Reward Advantaged	$\left  \begin{array}{cc} + & - \end{array} \right $	=	<div>inconsistent</div> <div>Selfish</div> <div>Self Reward Advantaged</div>	=	<div>Happy</div> <div>Hostility to Other</div>
Self Reward Disadvantaged	$\left  \begin{array}{cc} - & + \end{array} \right $	=	<div>inconsistent</div> <div>Excluded</div> <div>Self Reward Disadvantaged</div>	=	<div>Sad</div> <div>Affection toward Other</div>

## Comparative Emotions

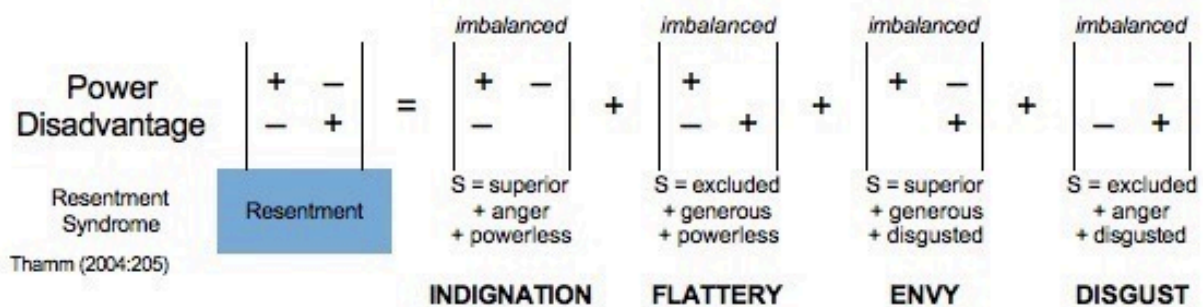
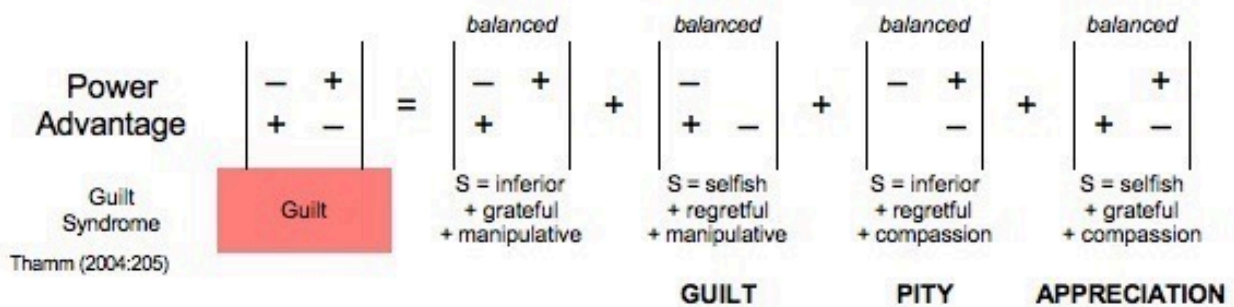
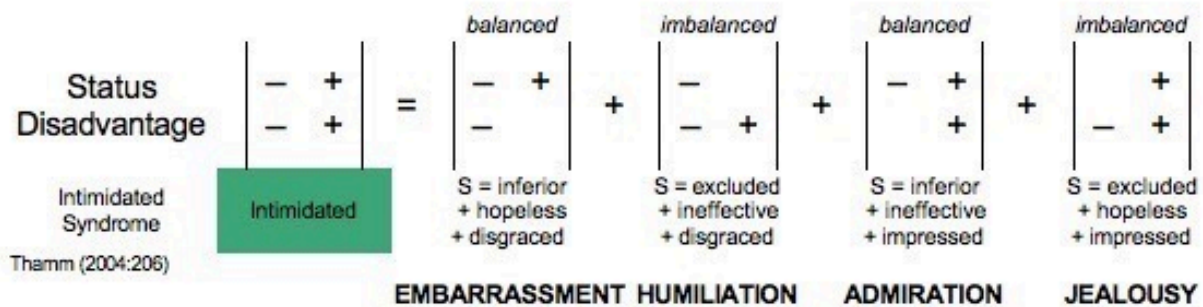
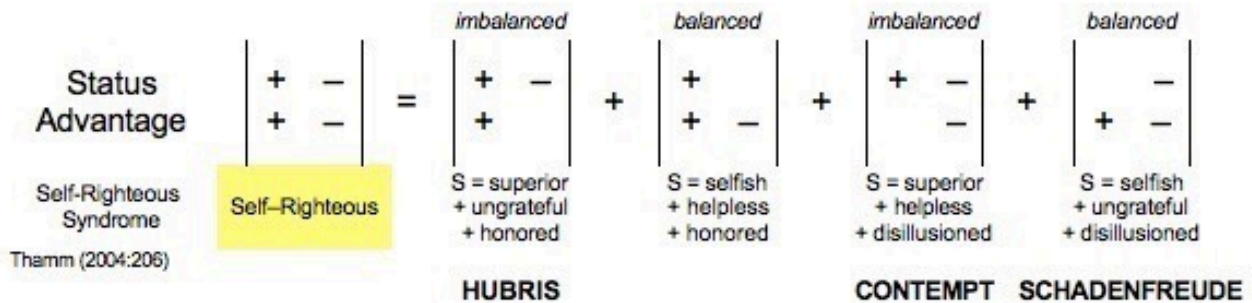
### Interaction Categories



## Subtle Emotion Taxonomy

### Conflict Interactions

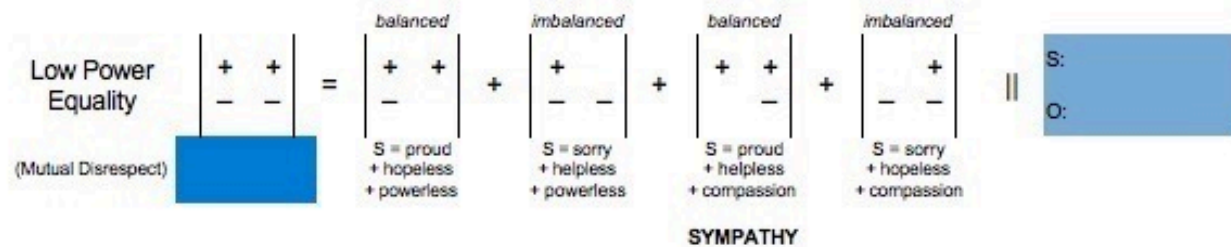
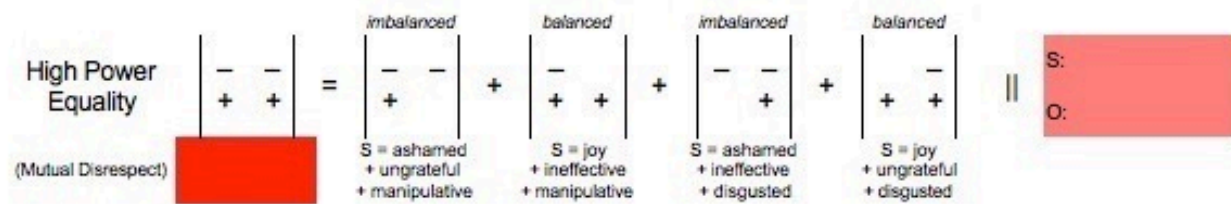
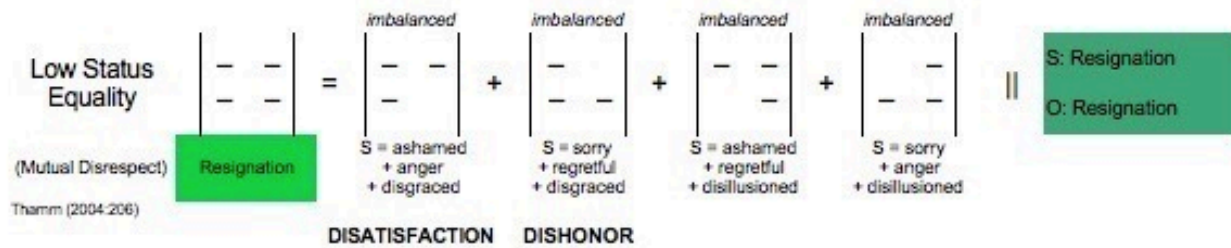
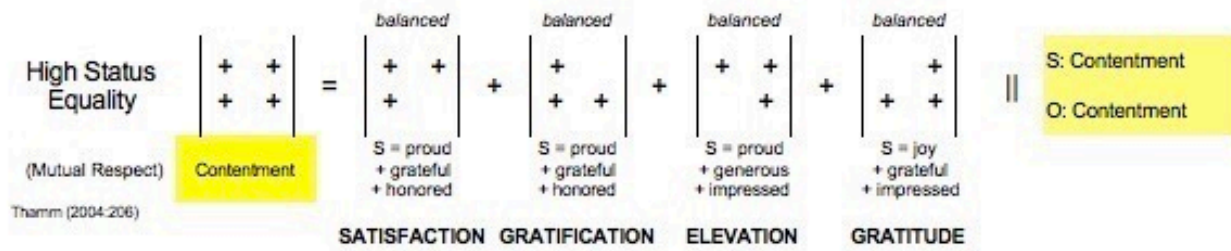
*S = Distributions*



## Subtle Emotion Taxonomy

### Consensus Interactions

*S = Distributional + Interactional + Attribution*

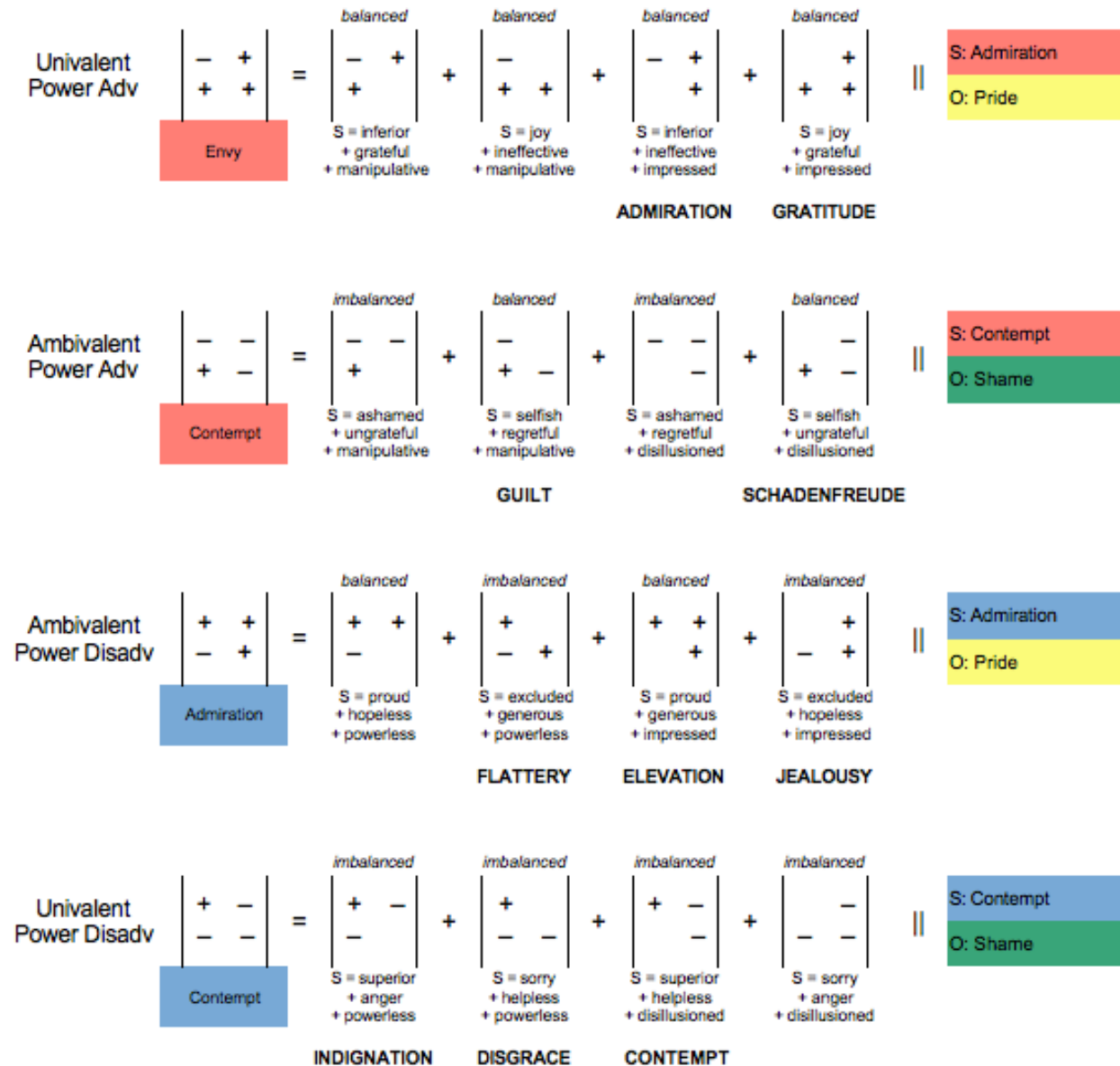




## Subtle Emotion Taxonomy

### Ambivalent Power Interactions

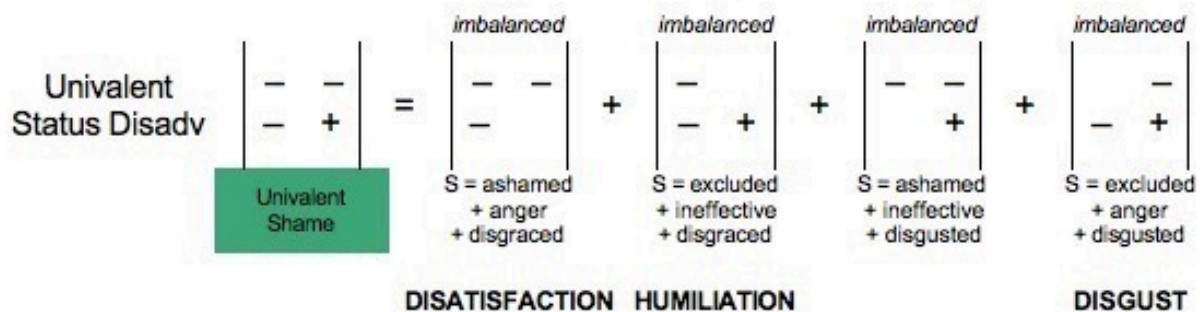
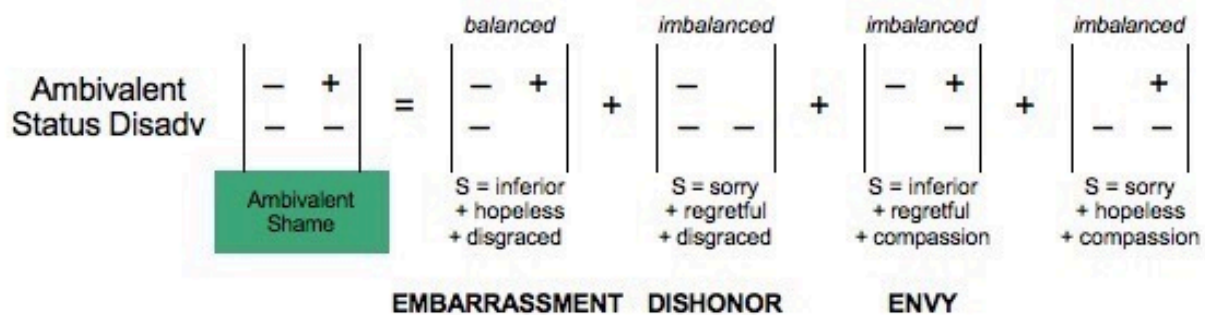
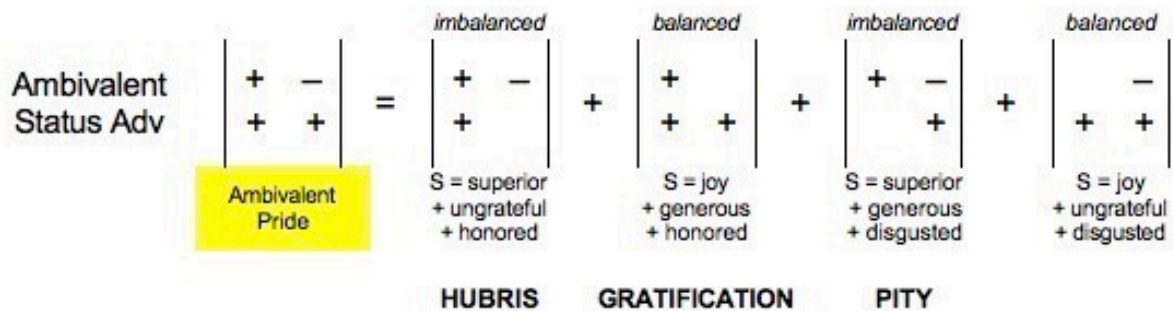
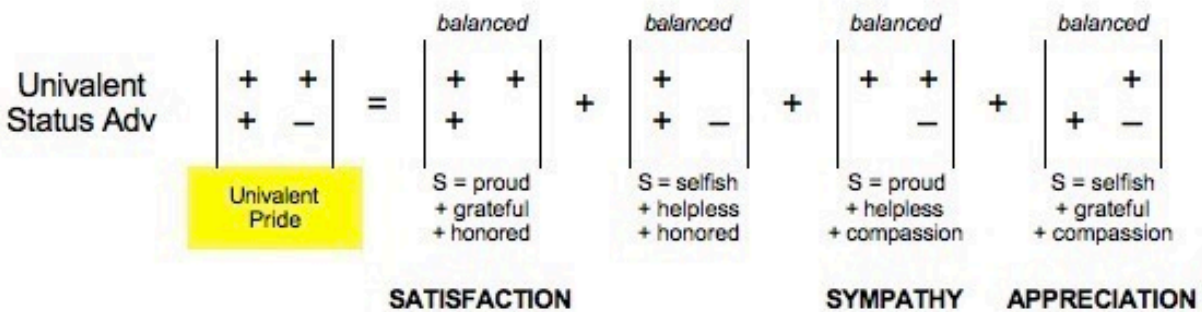
*S = Distributional + Interactional + Attribution*



## Subtle Emotion Taxonomy

### Ambivalent Status Interactions

*S = Distributions*



## Glossary

**Abduction** - the process in theory construction of iteratively producing a hypothesis and revising it based on surprising results of empirical evidence.

**Activity** - an EPA dimension of affect measuring intensity, concerning liveliness vs. quietness. See *Semantic Differential*.

**Affect** - the conscious, subjective experience of an emotion; an evaluative (positive or negative) orientation toward an object.

**Affect Regulation** - the set of control processes by which we influence, consciously and voluntarily, our emotions and how we experience and behaviorally express them (Schore, 2009: 116). See *Affect Control Theory*.

**Affective Meaning** - three abstract (EPA) dimensions—**Evaluation** (good versus bad), **Potency** (powerful versus weak), and **Activity** (lively versus quiet)—that add to the traditional denotive (dictionary) meaning associated with all semantic constructs.

**Affective Quality** - the ability to cause a change in core affect (Russell, 2003).

**Afferent Pathways** -the ascending nerves of the autonomic nervous system carrying signals mainly from the heart-brain via the vagus nerve and spinal cord to subcortical areas (medulla, hypothalamus, thalamus, amygdala) and then onto cortical areas (cerebral cortex) (McCraty, 2015).

**Agency** - active, willful, goal-seeking behavior

**Agonic Group** - a group dominated by a central powerful animal or small group of animals engaged in power oriented relations (Kemper & Collins, 1990). See *Power*.

**Alter** - the objective other in an interpersonal dyad.

**Altercasting** - creating and maintaining an identity for Alter in order to maintain one's own identity (Burke & Stets, 2009).

**Altruism** - prosocial behaviors that benefit the recipient at a cost to the donor (Decety & Svetlova, 2011). Behaviors that decrease relative fitness within groups but increase the fitness of groups (Sober & Wilson, 1998: 99).

**Allostasis** - the process of how the brain balances metabolic costs and benefits to ensure resources for physiological systems have enough to grow, survive and reproduce (Barrett, 2017: 3).

**Alloparenting** - cooperative breeding strategy where kinfolk, usually post-menopausal grandparents, aunts, sisters, share parenting responsibilities for young children to free the mother from constant care towards one child (Hrdy, 2009).

**Ambivalent Emotion** - a blended emotion having mixed positive and negative feeling. It can be the source of emotional dissociation.

**AQAL** - An term in Integral Theory for “All Quadrants, All Levels,” referring to IT’s 4 quadrant integral map representing the Internal-Psychological, External-Bio-behavioral, Internal-Cultural and External-Social, each of which contain evolutionary developmental levels. See *Integral Theory*.

**Arousal** - the intensity of experience.

**Attachment** - an innate biological system promoting proximity seeking between an infant and a specific attachment figure in order to increase the likelihood of survival to a reproductive age (Decety & Svetlova, 2011). The interactive regulation of biological synchronicity between organisms (Shore, 2000).

**Attention** - the brain’s ability to focus a large number of resource on a small number of signals.

**Attributed Affect** - core affect attributed to an object.

**Attribution** - the process in which people appraise behavior and events to determine cause.

**Attribution Categories** - *just* (deserving) and *unjust* (undeserving) attribution identities make up the structural definitions of these categories. Just structures are defined when the expectation sign is consistent with the sanctioning sign, and unjust structures are defined when the two signs are inconsistent. This distinction parallels Turner's (2002) conceptualization of justice and injustice in relations (Thamm, 1999).

**Autocueing** - voluntary retrieval from memory.

**Autonomy** - the degree to which agency is self-determined.

**Awareness** - the conscious focusing on an aspect of Attention, able to be grown through mindful practices.

**Blended Emotion** - a mixture of multiple emotions from several perspective sources. It can be either *Ambivalent* or *Univalent*.

**Categorical Perception** - the automatic differentiation and sorting of perceptual information into distinct categories according to a found similarity, across modalities.

**Categorization** - the process whereby an individual may treat non-identical objects or events as equivalent (Denton, 2005: 102).

**Cognitive Dissonance** - (Festinger, )(Laird, 2011).

**Concept** - a dynamical distributed system in the brain that represents a category in the environment or experience and that controls interactions with the category's instances (Barsalou,



2015). Different perceptual categorizations combined to construct a 'universal' through the abstraction of common features (Denton, 2005: 102).

**Confirmation Bias** -

**Congruency Effects** - in Affect Control Theory,

**Consistency Effects** - in Affect Control Theory,

**Constrained Relativism** - complexities at one level can be explained by physical properties bounding at a lower level (Verweij, 2007).

**Control System** - (Powers, 1973).

**Core Affect** - the constant stream of transient alterations in an organism's neurophysiological state that represent its immediate relation to the flow of changing events. In a sense, a neurophysiological barometer of the individual's relation to an environment at a given point in time, present at birth and homologous in all mammalian species (Barrett, 2006b: 30-31). Composed of two orthogonal dimensions, *Arousal* and *Valence*. Object free, although through attribution can be directed towards an object (Russell, 2003).

**Culture** - information capable of affecting individuals' behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission (Boyd and Richerson, 2001).

**Deduction** - the process of deriving statements (called propositions) from a set of assumptions (called axioms). See *Induction*.

**Deflection** - in affect control theory, the amount of disagreement between an identity and a role performance. Higher deflection results in negative impression formation. Highest deflection results in negation of identity.

**Degeneracy** - the capacity for dissimilar neural representations to give rise to instances of the same category (e.g. anger) in different contexts (i.e. many- to-one mappings of structure to function) (Barrett, 2017: 3).

**Depersonalization** - the process of seeing the self in terms of the social category embodied in the prototype or standard (Burke & Stets, 2018).

**Distributional Category** - includes the distribution of performances and the distribution of sanctions, between Self and Other. *Equal* distribution structures are defined when the two expectation signs are consistent, and *unequal* distribution structures are defined when the signs are inconsistent (Thamm, 1999)

**Divinity** - one of the Big "Three" ethics, attributed as being a causal agent of suffering to acts of God/divine (Shweder *et al.*, 1997).

**Dominance** (in emotion) - the degree of control exerted by the stimulus.

**Dorsal Vagal Complex (DVC)** - the oldest emotion subsystem of the Autonomic nervous system, connecting by the dorsal (bottom) vagal nerve to the gut.

**Dyad** - a group of two people, the smallest possible social group, linked via a social relationship.

**Dyadic Communication** - face-to-face verbal communication between two people involving their mutual ideas, thought, behavior, ideals, liking, disliking, and the queries and answers concerning life and living in nature (Wikipedia).

**Efferent Pathways** - the descending nerves in the autonomic nervous system carrying signals from the brain to the heart and other organs.

**Effortful Control** - a superordinate construct that includes temperamentally based regulatory skills, such as attentional and inhibitory control and planning (Alessandri *et al.*, 2014: 3).

**Egalitarianist** - one of the four person types from cultural theory, characterized by low Grid (egalitarian) & high Group (communion) dimensions.

**Ego** - the subjective subject in a generic dyad.

**Ego Depletion** - the state of diminished willpower or low energy associated with having exerted self-regulation.

**Ego Resiliency** - how well and flexibly individuals adapt to and/or deal with stressful interactions.

**Embodied Simulation** - the internal modeling of the body in the world for effective metabolic regulation (Barrett, 2017). See *Allostasis*.

**Emotion Management** - deliberate attempts by an individual to change one or more components of their subjective experience in order to bring that feeling into line with normative requirements (Thoits, 1994:192). See *Coping*.

**Emotion Regulation** - a component of Affect regulation, others of which include Coping, Mood Regulation, and Defenses (Gross, 2015).

**Emotions** - from the purview of ACT, the labels that are applied to the way we feel after social interaction.

**Empathetic Concern** - (sympathy) an other-oriented emotional response congruent with the perceived welfare of someone in need (Decety & Svetlova, 2011).

**Empathy** - an affective response stemming from the understanding of another's emotional state or condition similar to what the other person is feeling or would be expected to feel in the given situation (Decety & Svetlova, 2011). The formation of an association between the Other's display

and Ego's memory of the subjective experience of the corresponding emotion (Fessler, 1998).

**Empathizing** - the drive to recognize another person's mental states (emotions and thoughts) and respond with the appropriate emotional response (Baron-Cohen *et al.*, 2003).

**Environment of Evolutionary Adaptedness** - a statistical composite of the adaptation-relevant properties of the ancestral environments encountered by members of ancestral populations, weighted by their frequency and fitness-consequences. These properties are selected out of all possible environmental properties as those that actually interacted with the existing design of the organism during the period of evolution. (Tooby & Cosmides, 1990: 386-387).

**EPA Dimensions** - three universal dimensions of affect associated with all semantic meaning. Found in all languages studies, thus pancultural. EPA an acronym standing for the three dimensions: Evaluation (E), Potency (P), Activation (A). See *Semantic Differential*.

**Epidemiological Culture** -

**Epigenetics** -

**Evaluation** - an EPA dimension of affect measuring valence, concerning goodness vs. badness. See *Semantic Differential*.

**Evoked Culture** - behavior evoked by the environment, not through cultural processes. See *Innate Psychology*.

**Exteroception** - the perception of stimuli originating outside or at a distance from the body.

**Fatalist** - one of the four person types from cultural theory, characterized by high Grid (hierarchy) & low Group (communion) dimensions.

**Fundamental Attribution Error** - a cognitive bias in which people tend to under-emphasize situational explanations for observed behavior, while over-emphasizing dispositional explanations for their own behavior. Also known as Correspondence Bias or Attribution Effect.

**Heart-Brain** - the intrinsic cardiac nervous system, an intricate network of complex ganglia, neurotransmitters, proteins and support cells, that enables the heart to act independently of the cranial brain to learn, remember, make decisions and even feel and sense (McCraty, 2015).

**Heart Coherence** - an optimal physiological state associated with increased cognitive function, self-regulatory capacity, emotional stability and resilience (McCraty, 2015).

**Heart Rate Variability (HRV)** - the normally occurring beat-to-beat changes of heart-rate accelerations and decelerations reflecting nonlinear interactions among a number of different physiological systems. A measure of the functional status of physiological control systems (McCraty, 2015).

**Hedonic** - relating to emotion, pertaining to pleasantness or unpleasantness of sensation. See

*Evaluation.*

**Hedonic Group** - a group only occasionally led by a dominant animal, with lower rates of aggressions and high rates of mutual grooming and hugging (Kemper & Collins, 1990). See *Status*.

**Hierarchist** - one of the four person types from cultural theory, characterized by high Grid (hierarchy) & high Group (communion) dimensions.

**HPA Axis** - the Hypothalamic–pituitary–adrenal axis defines the neuroendocrine regulation system that controls stress reactions.

**Identity** - a self-categorization in terms of a social category referring to a class, group, or role as represented in the prototype or identity standard (Burke & Stets, 1998).

**Ideology** - the legitimacy of a social system with reference to moral standards (Fiske, 1992).

**Impression Formation** - the integration of separate pieces of information about a person's traits into a coherent view of that person.

**Induction** - the process by which general lessons are drawn from a finite set of experience or observation. See *Deduction*.

**Inference** - a process that, given some input information (premise), reliably yields as output further information (conclusion) that is likely to be true if the input information is, used in perception and motor control (Sperber & Mercier, 2014).

**Innate** - organized in advance of experience (Graham et al., 2009).

**Instrumental Action** - action that is directed at a problem (or opportunity) that requires a behavioral solution (Russell, 2003: 150).

**Interactional Emotion Categories** - Emotion categories generated by this dimension include *contributions* of Self-to-Other and *retributions* from Other-to-Self. *Effective* interaction structures are defined when the two signs are consistent, and *ineffective* interaction structures are defined when the two signs are inconsistent (Thamm, 1999).

**Intersubjectivity** - the subjective engagement of the self in social relation to others, ie what it feels like to be socially attuned with people around us.

**Integral Theory** - a philosophical theory integrating all human knowledge pursuits into a single coherent framework along two universal dimensions of Internal-External & Individual-Collective (cf Wilber, 2001).

**Interoception** - arising from the process of allostasis, the perception, representation and utilization of internal sensations such as pain, temperature (cool, heat, cold), pinch, pin prick, itch, sensual touch, muscle ache, burn, toothache, cardiac pain, the urge to urinate or defecate, and

vasomotor flush (Barrett, 2017; Craig, 2015).

**Interpersonal Orientation** - the tendency to either accommodate another's wishes or to assert one's will (Selman, 1980).

**Microinteraction** - dyadic social interaction between two persons, characterized by social communication via affective dimensions like gesture, posture, intonation, etc.

**Mimesis** - a supramodal system of motor control which can be retrieved from memory for the intentional imitation, rehearsal and modification of action that allows for the refinement of action by purposive repetition, thought to be a necessary preadaptation for human language (Donald, 1993).

**Moral Standard** - a norm which individuals insist they and others must pursue (Fiske, 1992).

**Motive** - a goal varying as a function of situation and differing consistently among individuals (Fiske, 1992).

**Norm** - a shared goal observed from the point of view of its functions for the collectivity (Fiske, 1992).

**Pancultural** - a phenomenon which appears consistently across all studied human cultures.

**Perception** - the discrimination of an object or event through one or more sensory modalities, separating them from the background inflow. Something is picked out (Denton, 2005: 102).

**Person Perception** - the process of assigning someone (or his or her behavior) to a meaningful category so that a perceiver "sees" an instance of that category and can infer something about the person's internal state or enduring disposition or both (Barrett, 2006b: 28).

**Post Hoc Reasoning** - after the fact reasoning positing an event following a previous event attributes the first as the cause of the second.

**Power** - the active ability of one social actor to compel or coerce another towards something they don't want to do, against their will (Kemper & Collins, 1990).

**Proprioception** - the perception arising from the kinaesthetic sense of self-movement and body position.

**Reasoning** - reflective inference.

**Reflection** - thinking about one's own thoughts.

**Resilience** - the capacity to prepare for, recover from and adapt in the face of stress, adversity, trauma or challenge (McCraty, 2015).

**Right Wing Authoritarianism (RWA)** - intra-group or defensive ethnocentrism, emphasizing

ethnic devotion, collective security, and cohesion (Sinn & Hayes, 2016).

**Schema** - a mental preconception about the habitual course of an event.

**Second Order Emotions** - an emotion caused by observing the emotion of another causing self-reflection.

**Self Categorization** - a cognitive association of the self with one social category in contrast to other categories (Burke & Stets, 1998).

**Self Concept** - the set of all of a person's identities (Burke & Stets, 1998).

**Self Regulation** - the process of altering one's responses, including thoughts, feelings, impulses, actions, and task performance.

**Self Verification** - the process of behaving to maintain one's situationally manifest identity close to the meanings and expectations given in the prototype or standard (Burke & Stets, 1998).

**Situated Conceptualization** - in embodied cognition, the process of interpretation of the concepts involved in an environmental setting, with agents, objects as well as the action they perform, sensations they feel and mentalizing they experience, all of which contribute to the construction of emotional feeling. See *Conceptual Act Theory of Emotion*.

**Social Cognition** -

**Social Dyad** - the smallest unit of microinteraction, between two individuals.

**Social Dominance Orientation (SDO)** - intergroup ethnocentrism stressing superiority, exploitation, and group-based dominance (Sinn & Hayes, 2016).

**Social Engagement System (SES)** - the neurophysiological system connecting the orbitofrontal cortex (OFC) with the sensorimotor peripheral system involved in Social Communication, connected by the vagus nerve.

**Social Perception** - awareness of social cues and rules that dictate social situations (Roberts *et al.*, 2018).

**Social Structure** - the pattern of repetitive microinteractions between individuals, that at the macro level, are identifiable identities and institutions.

**Status** - the passive ability to have others voluntarily comply to one's will, accompanied by "deference, acceptance and liking. It involves the voluntary provision of rewards, benefits, and gratifications without threat or coercion" (Kemper & Collins, 1990).

**Symbolic Interactionism (SI)** - the perspective that people's actions towards things are based on the meaning arising through the social interaction with others and adjusted through the process

of interpretation (Blumer, 1969).

**Symbolic Reference** - (Deacon, 1997).

**Systemizing** - the drive to analyze or construct systems, involving the use of systematic (Baron-Cohen, 2008).

**Temporal Process** - a series of operations or events leading to achievement of a specific result.

**Univalent Emotion** - a blended emotion having either strongly positive or negative feeling.

**Valence** - the positive or negative quality of an emotion, a dimensional property of experience (Barrett, 2006b) and one component of Core Affect.

**Value** - a goal consistently and widely shared (Fiske, 1992), trans-situational goals that vary in importance and serve as guiding principles in the life of a person or a group (Schwartz, 2007).

## Bibliography

Abele, A.E., & Wojciszke, B. (2007). Agency and Communion From the Perspective of Self Versus Others. *Journal of Personality and Social Psychology*, 93(5), 751–763. <https://doi.org/10.1037/0022-3514.93.5.751>

Abele, A.E., & Wojciszke, B. (2013). Communal and Agentic Content in Social Cognition: A Dual Perspective Model. In, Mark P. Zanna, James M. Olson (Eds.), *Advances In Experimental Social Psychology*, 50, 195-255. <https://doi.org/10.1016/B978-0-12-800284-1.00004-7>

Alessandri, G., Luengo Kanacri, B.P., Eisenberg, N.H., Zuffianò, A., Milioni, M., Vecchione, M., & Vittorio Caprara, G. (2014). Prosociality During the Transition From Late Adolescence to Young Adulthood: The Role of Effortful Control and Ego-Resiliency. *Personality and Social Psychology Bulletin*: 1–15. <https://doi.org/10.1177/0146167214549321>

Algoe, S.B., & Haidt, J. (2009). Witnessing excellence in action: the ‘other-praising’ emotions of elevation, gratitude, and admiration. *J Posit Psychol*, 4(2), 105–127. <https://doi.org/10.1080/17439760802650519>

Allison, T., Puce, A., & McCarthy, G. (2000). Social perception from visual cues: role of the STS region. *Trends Cogn. Sci.*, 4, 267–278. [https://doi.org/10.1016/S1364-6613\(00\)01501-1](https://doi.org/10.1016/S1364-6613(00)01501-1)

American Academy of Pediatrics (AAP). (2013). Adverse Childhood Experiences and the Lifelong Consequences of Trauma. *American Academy of Pediatrics*. <https://doi.org/10.1016/j.acap.2017.01.008>

Arnett, J.J. (2008). The Neglected 95%: Why American Psychology Needs to Become Less American. *American Psychologist*, 6(7), 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>

Auyeung, B., & Baron-Cohen, S. (2013). Prenatal and postnatal testosterone effects on human social and emotional behavior. In, S. Baron-Cohen, H. Tager-Flusberg & M.V. Lombardo (Eds.), *Understanding Other Minds: Perspectives from Developmental Social Neuroscience*, pp. 308-325. Oxford, UK: Oxford University Press. ISBN: 978–0–19–969297–2.

Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.

Aziz-Zadeh, L., Iacoboni, M., Zaidel, E., Wilson, S., & Mazziotta, J. (2004). Left hemisphere motor facilitation in response to manual action sounds. *European Journal of Neuroscience*, 19, 2609-2612. <https://doi.org/j.1460-9568.2004.03348.x>

Bakan, D. (1966). *The duality of human existence. An essay on psychology and religion*. Chicago: Rand McNally.

Balzarotti, S., Biassoni, F., Colombo, B., & Ciceria, M.R. (2017). Cardiac vagal control as a marker of emotion regulation in healthy adults: A review. *Biological Psychology*, 130, 54–66. <https://doi.org/10.1016/j.biopsycho.2017.10.008>

Baron-Cohen, S. (1995). The Eye Direction Detector EDD and the Shared Attention Mechanism



(SAM), Two Cases for Evolutionary Psychology. In, C. Moore & P.J. Dunham (Eds.), *Joint Attention: Its Origins and Role In Development*, pp. 41-59. Hillsdale, NJ: Lawrence Erlbaum Associates.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends Cogn. Sci.*, 6, 248–254. [https://doi.org/10.1016/S1364-6613\(02\)01904-6](https://doi.org/10.1016/S1364-6613(02)01904-6)

Baron-Cohen, S. (2008). *Autism and Asperger Syndrome*. New York: Oxford University Press.

Baron-Cohen, S. (2020). *The Pattern Seekers: How Autism Drives Human Invention*. New York: Basic Books.

Baron-Cohen, S., & Wheelwright, S. (2003). The Systemizing Quotient: An Investigation of adults with Asperger syndrome or High Functioning Autism, and Normal Sex Differences. *Phil. Trans. R. Soc. Lond.*, 02tb010h: 1-14. <https://doi.org/10.1098/rstb.2002.1206>

Baron-Cohen, S., & Wheelwright, S. (2004). The Empathy Quotient: An Investigation of Adults with Asperger Syndrome or High Functioning Autism, and Normal Sex Differences. *Journal of Autism and Developmental Disorders*, 34(2), 163-175;

Barrett, L.F. (1998). Discrete Emotions or Dimensions? The Role of Valence Focus and Arousal Focus. *Cognition and Emotion*, 12(4), 579-599.

Barrett, L.F. (2006a). Are Emotions Natural Kinds? *Perspectives On Psychological Science*, 1(1), 28-58.

Barrett, L.F. (2006b). Solving the Emotion Paradox. *Personality and Social Psychology Review*, 10(1), 20-46.

Barrett, L.F. (2011). Constructing Emotion. *Psychological Topics*, 20(3), 359-380.

Barrett, L.F. (2013). Psychological Construction: The Darwinian Approach to the Science of Emotion. *Emotion Review*, 5(4), 379-389. <https://doi.org/10.1177/1754073913489753>

Barrett, L.F. (2015). Ten Common Misconceptions about Psychological Construction Active Theories of Emotion. In, L.F. Barrett & J.A. Russell (Eds.), *The Psychological Construction of Emotion*, pp. 45-79. New York: The Guilford Press.

Barrett, L.F. (2017). The Theory of Constructed Emotion: An Active Inference Account of Interoception and Categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. <https://doi.org/10.1093/scan/nsw154>

Barrett, L.F., Lindquist, K.A., & Gendron, M. (2007). Language as context for the perception of emotion. *TRENDS in Cognitive Sciences*, 11(8), 327-332. <https://doi.org/10.1016/j.tics.2007.06.003>

Barrett, L.F., & Russell, J.A. (1999). The Structure of Current Affect: Controversies and Emerging Consensus. *Current Directions in Psychological Science*, 8(1), 10-14. <https://doi.org/https://doi.org/10.1111/1467-8721.00003>

- Barrett, L.F., & Simmons, W.K. (2015). Interoceptive Predictions in the Brain. *Nature Reviews Neuroscience*, 16(1), 1-12. <https://doi.org/10.1038/nrn3950>
- Barrett, L.F., Tugade, M.M., & Engle, R.W. (2004). Individual Differences in Working Memory Capacity and Dual-Process Theories of the Mind. *Psychological Bulletin*, 130(4), 553-573. <https://doi.org/10.1037/0033-2909.130.4.553>
- Barsalou, L.W. (1983). Ad hoc categories. *Memory & Cognition*, 11, 211-27.
- Barsalou, L.W. (2015). Situated Conceptualization: Theory and Applications. In, L.F. Barrett & J.A. Russell (Eds.), *Perceptual and Emotional Embodiment: Foundations of Embodied Cognition Volume 1*, pp. 45-79. New York: Routledge.
- Barsalou, L.W. (2017). Perceptual Symbol Systems. *Behavioral and Brain Sciences*, 22, 577-660.
- Bateson, G. (1982). *Mind and Nature: A Necessary Unity*. New York: Dutton.
- Bateson, G. (1987). *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*. Chicago: University of Chicago Press.
- Baumeister, R.F. (2003). Ego Depletion and Self-Regulation Failure: A Resource Model of Self-Control. *Alcoholism: Clinical And Experimental Research*, 27(2), 281-284.
- Baumeister, R.F. (2014). Self-regulation, ego depletion, and inhibition. *Neuropsychologia*, 65, 313-319.
- Baumeister, R.F., Bratslavsky, E., Muraven, M., & Tice, D.M. (1998). Ego Depletion: Is the Active Self a Limited Resource? *Journal of Personality and Social Psychology*, 74, 1252-1265. <https://doi.org/10.1037/0022-3514.74.5.1252>
- Baumeister, R.F., Vohs, K.D., DeWall, C.N., & Zhang, L. (2007). How Emotion Shapes Behavior: Feedback, Anticipation, and Reflection, Rather Than Direct Causation. *Personality and Social Psychology Review*, 11, 167-203. <https://doi.org/10.1177/1088868307301033>
- Billeci, L., Tonacci, A., Narzisi, A., Manigrasso, Z., Varanini, M., Fulceri, F., Lattarulo, C., Calderoni, S., & Muratori, F. (2018). Heart Rate Variability During a Joint Attention Task in Toddlers With Autism Spectrum Disorders. *Frontiers in Psychology*, 9(467), 1-11. <https://doi.org/10.3389/fphys.2018.00467>
- Blackmore, S. (1999). *The Meme Machine*. New York: Oxford University Press.
- Beauchaine, T.P., Neuhaus, E., Zalewski, M., & Crowell, S.E. (2011). The effects of allostatic load on neural systems subserving motivation, mood regulation, and social affiliation. *Development and Psychopathology*, 23, 975-999.
- Bechara, A. (2002). The Neurology of Social Cognition. *Brain*, 125, 1673-1675.
- Bechara, A., Damasio, H., & Damasio, A. (2000). Emotion, Decision Making and the Orbitofrontal

Cortex. *Cerebral Cortex*, 10, 295–307.

Beck, D.E., & Cowan, C.C. (2006). *Spiral dynamics: Mastering values, leadership, and change*. Cambridge: Blackwell Publishing.

Benjamin, L.S. (1974). Structural analysis of social behavior. *Psychological Review*, 81, 392-425. <https://doi.org/10.1037/h0037024>

Benjamin, L.S. (1996). A clinician-friendly version of the Interpersonal Circumplex: Structural Analysis of Social Behavior (SASB). *Journal of Personality Assessment*, 248-266.

Berlin, B., & Kay, P. (1969). *Basic color terms: their universality and evolution*. Berkeley & Los Angeles: University of California Press.

Berntson, G.G, Cacioppo, J.T., & Quigley, K.S. (1991). Autonomic Determinism: The Modes of Autonomic Control, the Doctrine of Autonomic Space, and the Laws of Autonomic Constraint. *Psychological Review*, 98(4), 459-487. <https://doi.org/10.1037/0033-295X.98.4.459>

Berntson, G.G. et al. (1997). Heart Rate Variability: origins, methods, and interpretive caveats. *Psychophysiology*, 34, 623-648. <https://doi.org/10.1111/j.1469-8986.1997.tb02140.x>

Berntson, G.G., Norman, G.J., Hawkey, L.C., & Cacioppo, J.T. (2008). Cardiac Autonomic Balance vs. Cardiac Regulatory Capacity. *Psychophysiology*, 45, 643–652. <https://doi.org/10.1111/j.1469-8986.2008.00652.x>

Blom, E.H., Duncan, L.G., Ho, T.C., Connolly, C.G., LeWinn, K.Z., Chesney, M., Hecht, F.M., & Yang, T.T. (2014). The development of an RDoC-based treatment program for adolescent depression: “Training for Awareness, Resilience, and Action” (TARA). *Frontiers in Human Neuroscience*, 8(630), 1-19.

Blumer, H. (1969). *Symbolic Interactionism*. Berkeley: University of California Press.

Boehm, C. (1993). Egalitarian Behavior and Reverse Dominance Hierarchy. *Current Anthropologist*, 34(3), 227-254.

Boehm, C. (2000). Conflict and the Evolution of Social Control. *Journal of Consciousness Studies*, 7(1-2), 79–101.

Boyd, R., & Richerson, P.J. (1992). Punishment Allows the Evolution of Cooperation (or Anything Else) in Sizable Groups. *Ethology and Sociobiology*, 13, 171-192.

Boyd, R., & Richerson, P.J. (2010). Transmission coupling mechanisms: cultural group selection. *Phil. Trans. R. Soc. B.*, 365:3787–3795. <https://doi.org/10.1098/rstb.2010.0046>

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.

Brinck, I. (2004). The Pragmatics of Imperative and Declarative Pointing. *Cognitive Science Quarterly*, 3(4), 429-446.

Brown, B. (2011). The power of vulnerability | Brené Brown. *TED*. Retrieved from <https://youtu.be/iCvmsMzlF7o>

Brown, L. (2011). *Identity-First Language*. AutisticAdvocacy. Accessed December 25, 2021. <https://autisticadvocacy.org/about-asan/identity-first-language/>

Bruce, J.R. (2013). Uniting theories of morality, religion, and social interaction: Grid-group cultural theory, the Big Three ethics, and moral foundations theory. *Psychology and Society*, 5(1), 37–50.

Buber, M. (1971). *I and Thou*. New York: Touchstone.

Buck, M. (2010). Two-Factor Theory Of Learning: Application To Maladaptive Behavior. *School and Health*, 21, 333-338.

Burke, P.J., & Stets, J.E. (1998). *Identity Theory and Social Identity Theory*. Washington State University: Pullman, Wa.

Burke, P.J., & Stets, J.E. (2009). *Identity Theory*. New York: Oxford University Press.

Bush, M., & Gassner, S.M. (1988). A Description And Clinical Research Application Of The Control-Mastery Theory. *Clinical Social Work Journal*, 16(3), 231-242.

Cacioppo, J.T., & Berntson, G.G. (1994). Relationship Between Attitudes and Evaluative Space: A Critical Review, With Emphasis on the Separability of Positive and Negative Substrates. *Psychological Bulletin*, 115(3), 403-423. <https://doi.org/10.1037/0033-2909.115.3.401>

Cacioppo, J.T., Gardiner, W.L., & Berntson, G.G. (1999). The Affect System Has Parallel and Integrative Processing Components. *Journal of Personality and Social Psychology*, 76(5), 839-855.

Carnes, N.C., Lickle, B., & Janoff-Bulman, R. (2015). Shared Perceptions: Morality Is Embedded in Social Contexts. *Cross-Personality and Social Psychology Bulletin*, 41(3), 351–362. <https://doi.org/10.1177/0146167214566187>

Carpenter, S. (2000). Effects of Cultural Tightness and Collectivism on Self-Concept and Causal Attributions. *Cross-Cultural Research*, 34, 38-56. <https://doi.org/10.1177/106939710003400103>

Carter, C.S. (2014). Oxytocin Pathways and the Evolution of Human Behavior. *Annual Review of Psychology*, 65, 10.1–10.23.

Caulkins, D. (1999). Is Mary Douglas's grid-group analysis useful for cross-cultural research? *Cross-Cultural Research*, 33, 108–128.

Center for Public Integrity. (2014). *Iraq: The Wild Card*. Accessed December 14, 2020. <https://publicintegrity.org/politics/false-pretenses/>

Chai, S.K., Liu, M., & Kim, M.S. (2009). Cultural Comparisons of Beliefs and Values: Applying the

Grid-Group Approach to the World Values Survey. *Beliefs and Values*, 1(2), 193-208. <https://doi.org/10.1891/1942-0617.1.2.193>

Chalmers, D. (1995), Facing up to the problem of consciousness. *Journal of Consciousness Studies*, 2, 200–219.

ChaoticBrain. (2019). *Plutchik Dyads*. Wikipedia. Accessed July 24, 2021. [https://commons.wikimedia.org/wiki/File:Plutchik\\_Dyads.svg](https://commons.wikimedia.org/wiki/File:Plutchik_Dyads.svg)

Clark, J.A., & Fessler, D.M.T. (2014). The role of disgust in norms, and the role of norms in disgust research: Why liberals shouldn't be morally disgusted by moral disgust. *Topoi: An International Review Of Philosophy*. <http://escholarship.org/uc/item/4kp86o89>

Clore, G.L., & Pappas, J. (2007). The Affective Regulation of Social Interaction. *Social Psychology Quarterly*, 70(4), 333–339.

Clore G.L., & Ortony A. (2008). Appraisal theories: how cognition shapes affect into emotion. In, Lewis M., Haviland-Jones J.M., & Barrett L.F., (Eds.). *Handbook of Emotions*, Third Edition, pp. 628–42. New York: Guilford Press.

Clore, G.L., & Ortony, A. (2013). Psychological construction in the OCC model of emotion. *Emotion Review*, 5, 335–343.

Cooley, C.H. (1922/1964). *Human Nature and Conduct*. New York: Schocken Books.

Cosmides, L., & Tooby, J. (1992a). Cognitive Adaptations for Social Exchange. In, J. Barkow, L. Cosmides and J. Tooby (Eds.), *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, pp. 163-228. New York: Oxford University Press.

Cosmides, L., & Tooby, J. (1992b). The Psychological Foundations of Culture. In, J. Barkow, L. Cosmides and J. Tooby (Eds.), *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, pp. 19-136. New York: Oxford University Press.

Cosmides, L., Tooby, J., & Barkow, J.H. (1992c). Introduction: Evolutionary Psychology and Conceptual Integration. In, J. Barkow, L. Cosmides and J. Tooby (Eds.), *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, pp. 3-15. New York: Oxford University Press.

Costa, M., Ricci Bitti, P.E., & Bonfiglioli, L.(2000). Psychological Connotations of Harmonic Musical Intervals. *Psychology of Music*, 28, 4-22.

Costa, P.T., Jr., & McCrae, R.R. (1985). Concurrent Validation After 20 Years: Implications of Personality Stability for Its Assessment. In, J.N. Butcher & C.D. Spielberger (Eds.), *Advances in personality assessment*, vol 4, pp. 31-54. Hillsdale, NJ: Lawrence Erlbaum.

Costa, P.T., Jr., & McCrae, R.R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.



Craig, A.D. (Bud). (2003). Interoception: the sense of the physiological condition of the body. *Current Opinion in Neurobiology*, 13, 500–505.

Craig, A.D. (Bud). (2008). Interoception and Emotion: a Neuroanatomical Perspective. In, M. Lewis, J.M. Haviland-Jones & L.F. Barrett (Eds.), *Handbook of Emotion, Third Edition*, pp. 272-290. New York: The Guilford Press.

Craig, A.D. (Bud). (2009). How do you feel -- now? The anterior insula and human awareness. *Nat Rev Neurosci*, 10(1), 59-70. <https://doi.org/10.1038/nrn2555>

Craig, A.D. (Bud). (2015). *How do you feel?* Princeton, NJ: Princeton University Press.

Criddle, E.J., & Fox-Decent, E. (2019). Mandatory Multilateralism. *113 American Journal of International Law (2019 Forthcoming)*. Available at SSRN: <https://ssrn.com/abstract=3328928>

Cromwell, H.C, Abeb, N., Barrett, K.C., Caldwell-Harris, C., Gendolla, G.H.E., Koncz, R., & Sachdev, P.S. (2020). Mapping the interconnected neural systems underlying motivation and emotion: A key step toward understanding the human affectome. *Neuroscience and Biobehavioral Reviews*, 113, 204–226. <https://doi.org/10.1016/j.neubiorev.2020.02.032>

Curry, O. S. (2016). Morality as Cooperation: A Problem-Centered Approach. In, T.K. Shackelford & R.D. Hansen (Eds.), *The Evolution of Morality*, pp. 27-52. Springer.

Curry, O.S., Chesters, M.J., & Van Lissa, C.J. (2019a). Mapping morality with a compass: Testing the theory of 'morality-as-cooperation' with a new questionnaire. *Journal of Research in Personality*, 78, 106-124. <https://doi.org/10.1016/j.jrjp.2018.10.008>

Curry, O.S., Mullins, D.A., & Whitehouse, H. (2019b). Is It Good to Cooperate? Testing the Theory of Morality-as-Cooperation in 60 Societies. *Current Anthropology*, 60:47-69. <https://doi.org/10.1086/701478>

Curry, O.S., Alfano, M., Brandt, M.J., & Pelican, C. (2021). Moral Molecules: Morality as a combinatorial system. *Review of Philosophy and Psychology*, 1-20. <https://doi.org/10.1007/s13164-021-00540-x>

Cuddy, A.J.C., Fiske, S.T., & Glick, P. (2008). Warmth and Competence As Universal Dimensions of Social Perception: The Stereotype Content Model and the BIAS Map. *Advances in Experimental Social Psychology*, 40, 61–149.

Czikszentmihalyi, M. (1993). *The Evolving Self: A Psychology for the Third Millennium*. New York: HarperPerennial.

Dalton, P., Maute, C., Oshida, A., Hikichi, S., & Izumi, Y. (2008). The Use of Semantic Differential Scaling to Define the Multidimensional Representation of Odors. *Journal of Sensory Studies*, 23, 485–497.

Damasio, A. (1995). *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: HarperPerennial.

- Damasio, A. (1998). Emotion in the perspective of an integrated nervous system. *Brain Research Reviews*, 26, 83–86.
- Damasio, A. (1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. San Diego, CA: Harcourt.
- Damasio, A. (2010). *Self Comes to Mind: Constructing the Conscious Brain*. New York: Vintage.
- Damasio, A., Damasio, H., & Tranel, D. (2013). Persistence of feelings and sentience after bilateral damage to the insula. *Cerebral Cortex*, 23, 833–846.
- Davidson, R.J. (2010). Empirical explorations of mindfulness: conceptual and methodological conundrums. *Emotion*, 10, 8–11. <https://doi.org/10.1037/a001848>
- Davies, I., & Corbett, G. (1994). The Basic Color Terms in Russian. *Linguistics*, 32, 65–89.
- Darwall, S. (2009). *The Second-Person Standpoint: Morality, Respect, and Accountability*. Cambridge, MA: Harvard University Press.
- Darwin, C. (1871). *The Decent of Man and Selection in Relation to Sex*. London: Murray.
- Dawkins, R. (2006). *The Selfish Gene: 30<sup>th</sup> Anniversary Edition*. New York: Oxford University Press.
- Deacon, T.W. (1997). *The Symbolic Species*. New York: WW Norton & Company.
- Deacon, T.W. (2003). The Symbolic Species. In, S. Kirby & M.H. Christiansen (Eds.), *Language Evolution*, pp. 111–139. New York: Oxford University Press.
- Deacon, T.W. (2011). *Incomplete Nature: How Mind Emerged from Matter*. New York: WW Norton & Company.
- Deacon, T.W. (2012). Beyond the Symbolic Species. In, T. Schilhab, F. Stjernfelt & T.W. Deacon (Eds.), *The Symbolic Species Evolved*, pp. 9–38. Dordrecht: Springer. [https://doi.org/10.1007/978-94-007-2336-8\\_2](https://doi.org/10.1007/978-94-007-2336-8_2)
- Decety, J., & Jackson, P.L. (2004). The Functional Architecture of Human Empathy. *Behavioral and Cognitive Neuroscience Reviews*, 3(2), 71–100. <https://doi.org/10.1177/1534582304267187>
- Decety, J., & Lamm, C. (2009). The Biological Bases of Empathy. In, J.T. Cacioppo & G.G. Berntson (Eds.), *Handbook of Neuroscience for the Behavioral Sciences*, pp. 940–957. New York: John Wiley & Sons.
- Decety, J., & Svetlova, M. (2011). Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental Cognitive Neuroscience*. <https://doi.org/10.1016/j.dcn.2011.05.003>
- Decety, J., & Yoder, K.J. (2016). Empathy and motivation for justice: Cognitive empathy and concern, but not emotional empathy, predict sensitivity to injustice for others. *Social Neuroscience*, 11(1), 1–14. <https://doi.org/10.1080/17470919.2015.1029593>

- Depue, R.A., & Collins, R.F. (1999). Neurobiology of the structure of personality: Dopamine, facilitation of incentive motivation, and extraversion. *Behavioral and Brain Sciences*, 22, 491-569.
- De Villiers, T. (2007). Why Peirce Matters: the symbol in Deacon's Symbolic Species. *Language Sciences*, 29, 88-108.
- De Waal, F.B.M. (1982). *Chimpanzee politics*. New York: Harper & Row.
- De Waal, F.B.M. (1996). *Good Natured: The origins of right and wrong in humans and other animals*. Cambridge, MA: Harvard University Press.
- De Waal, F.B.M. (2013). *How Bad Biology is Killing the Economy: The flaws in the competition-is-good-for-you logic*. Accessed May 26, 2020. <https://evonomics.com/how-bad-biology-is-killing-the-economy/>
- DeYoung, C.G., Quilty, L.C., & Peterson, J.B. (2007). Between Facets and Domains: 10 Aspects of the Big Five. *Journal of Personality and Social Psychology*, 93(5), 880-896. <https://doi.org/10.1037/0022-3514.93.5.880>
- DeYoung, C.G., Weisberg, Y.J., Quilty, L.C., & Peterson, J.B. (2012). Unifying the Aspects of the Big Five, the Interpersonal Circumplex, and Trait Affiliation. *Journal of Personality*, 81(5), 465-475. <https://doi.org/10.1111/jopy.12020>
- DeYoung, C.G., Quilty, L.C., Peterson, J.B., & Gray, J.R. (2014). Openness to Experience, Intellect, and Cognitive Ability. *Journal of Personality Assessment*, 96(1), 46-52. <https://doi.org/10.1080/00223891.2013.806327>
- Digman, J.M. (1990). Personality structure: Emergence of the Five-Factor Model. *Annual Review of Psychology*, 41, 417-440. <https://doi.org/10.1146/annurev.ps.41.020190.002221>
- Dilts, R.B. (2014). *A Brief History of Logical Levels*. NLP University. Accessed December 6, 2016. <http://www.nlpu.com/Articles/LevelsSummary.htm>
- Di Domenico, S.I., & Ryan, R.M. (2017). The Emerging Neuroscience of Intrinsic Motivation: A New Frontier in Self-Determination Research. *Frontiers in Human Neuroscience*, 11(145), 1-14. <https://doi.org/10.3389/fnhum.2017.00145>
- Dixon, M.R., Belisle, J., McKeel, A., Whiting, S., Speelman, R., Daar, J.H., & Rowsey, K. (2017). An Internal and Critical Review of the PEAK Relational Training System for Children with Autism and Related Intellectual Disabilities: 2014-2017. *Behav. Analyst*, 40, 493-521. <https://www.doi.org/10.1007/s40614-017-0119-4>
- Donald, M. (1993). Precipitous Origins Of The Modern Mind - 3 Stages In The Evolution Of Culture And Cognition. *Behavioral and Brain Sciences*, 16, 737-748.
- Douglas, M., & Wildavsky, A.B. (1982). *Risk and culture: An essay on the selection of technical and environmental dangers*. Berkeley, CA: University of California Press.



- Dunbar, R. (1997). *Grooming, Gossip, and the Evolution of Language*. Cambridge, MA: Harvard University Press.
- Duncan, S., & Barrett, L.F. (2006). Affect is a form of cognition: A neurobiological analysis. *Cognition & Emotion*, 21(6), 1184-1211.
- Druzin, B. (2013). Eating Peas with One's Fingers: A Semiotic Approach to Law and Social Norms. *Int J Semiot Law*, 26, 257-274. <https://doi.org/10.1007/s11196-012-9271-z>
- Druzin, B. (2016). The Parched Earth of Cooperation: How to Solve the Tragedy of the Commons in International Environmental. *Duke Journal Of Comparative & International Law*, 27, 73-105.
- Edelman, G. (1987). *Neural Darwinism*. New York: Basic Books.
- Ekman, P. (2003). *Emotions Revealed*. New York: Times Books.
- Everaert-Desmedt, N. (2011). Peirce's Semiotics. In, Louis Hébert (Ed.), *Signo [online]*, Rimouski (Quebec). Accessed January 19, 2017. <http://www.signosemio.com/peirce/semiotics.asp>
- Eysenck, H.J. (1991). Is Suggestibility? In, J.F. Schumaker (Ed.), *Human Suggestibility: Advances in Theory, Research, and Application*, pp. 76-90. New York: Routledge.
- Eysenck, H.J. (1997). *Dimensions of Personality*. London: Transaction Publishing.
- Favre, M., & Sornette, D. (2015). A generic model of dyadic social relationships. *Swiss Finance Institute*, Research Paper Series 13(62).
- Favre, M., & Sornette, D. (2016). *Forms of Social Relationships in Distinct Cultural Settings*. Available at SSRN: <https://ssrn.com/abstract=2772520> or <https://doi.org/10.2139/ssrn.2772520>
- Feinberg, M., Willer, R., & Keltner, D. (2011). Flustered and Faithful: Embarrassment as a Signal of Prosociality. *Journal of Personality and Social Psychology*. Advance online publication. <https://doi.org/10.1037/a0025403>
- Feldman, L.A. (1995a). Valence-focus and arousal-focus: Individual differences in the structure of affective experience. *Journal of Personality and Social Psychology*, 69, 153-166.
- Feldman, L.A. (1995b). Variations in the circumplex structure of emotion. *Personality and Social Psychology Bulletin*, 21, 806-817.
- Fessler, D.M.T. (1999). Toward an Understanding of the Universality of Second Order Emotions. In, A. Hinton (Ed.), *Beyond Nature or Nurture: Biocultural Approaches to the Emotions*. Cambridge, UK: Cambridge University Press.
- Fessler, D.M.T. (2003). The Strategy of Affect: Emotions in Human Cooperation 12. In, P. Hammerstein, ed., *Genetic and Cultural Evolution of Cooperation*, Dahlem Workshop Report. Cambridge, MA: The MIT Press.
- Fessler, D.M.T. (2004). Shame in Two Cultures: Implications for Evolutionary Approaches.

*Journal of Cognition and Culture*, 4(2), 207-262.

Fessler, D.M.T. (2007). From appeasement to conformity: Evolutionary and cultural perspectives on shame, competition, and cooperation. In Tracy, J.L., Robins, R.W., Tangney, J.P. (Eds.), *The Self-Conscious Emotions: Theory and Research*, pp. 174-193. New York: Guilford Press.

Fiske, A.P. (1991). *Structures of Social Life*. New York: The Free Press.

Fiske, A.P. (1992). The Four Elementary Forms of Sociality: Framework for a Unified Theory of Social Relations. *Psychological Review*, 99(4), 689-723. [http://www.sscnet.ucla.edu/anthro/faculty/fiske/pubs/Fiske\\_Four\\_Elementary\\_Forms\\_Sociality\\_1992.pdf](http://www.sscnet.ucla.edu/anthro/faculty/fiske/pubs/Fiske_Four_Elementary_Forms_Sociality_1992.pdf)

Fiske, A.P. (2002). Socio-Moral Emotions Motivate Action to Sustain Relationships. *Self and Identity*, 1, 169-175.

Fiske, A.P. (2004a). Relational Models Theory 2.0. In, N. Haslam (Ed.), *Relational Models Theory*, pp. 3-25. Mahwah, NJ: Lawrence Erlbaum Associates. ISBN: 978-0805839159.

Fiske, A.P. (2004b). Four Modes Of Constituting Relationships: Consubstantial Assimilation; Space, Magnitude, Time, and Force; Concrete Procedures; Abstract Symbolism. In, N. Haslam (Ed.), *Relational Models Theory*, pp. 61-146. Mahwah, NJ: Lawrence Erlbaum Associates. ISBN: 978-0805839159.

Fiske, A.P., & Fiske, S.T. (2007). Social relations in our species and our cultures. In, S. Kitayama & D. Cohen (Eds.), *Handbook of Cultural Psychology*, pp. 283-306. New York: Guilford. ISBN: 978-1593854447.

Fiske, A.P., Thomsen, L., & Thein, S.M. (2009). Commentary: Differently embodying different relationships. *European Journal of Social Psychology*, 39, 1294-1297. <https://doi.org/10.1002/ejsp.697>

Fiske, S.T., Cuddy, A.J.C., Glick, P., & Xu, J. (2002). A Model of (Often Mixed) Stereotype Content: Competence and Warmth Respectively Follow From Perceived Status and Competition. *Personality and Social Psychology Review*, 82(6), 878-902. <https://doi.org/10.1037//0022-3514.82.6.878>

Fiske, S.T., Cuddy, A.J.C., & Glick, P. (2007). Universal dimensions of social cognition: warmth and competence. *TRENDS in Cognitive Sciences*, 11(2), 77-83. <https://doi.org/10.1016/j.tics.2006.11.005>

Fiske, S.T. (2004). *Social beings: A core motives approach to social psychology*. New York: Wiley.

Fiske, S.T. (2012). Warmth and Competence: Stereotype Content Issues for Clinicians and Researchers. *Canadian Psychological Association*, 53, 14-20.

Fiske, S.T. (2018). Stereotype Content: Warmth and Competence Endure. *Current Directions in Psychological Science*, 27(2), 67-73. <https://doi.org/10.1177/0963721417738825>

Fiske, S.T., & Taylor, S.F. (1991). *Social Cognition, Second Edition*. New York: McGraw-Hill. ISBN:

978-0071009102.

Funder, D.C., & Harris, M.J. (1986). On the several facets of personality assessment: The case of social acuity. *Journal of Personality*, 54, 528-550.

Funkenstein, D.H. (1955). The Physiology of Fear and Anger. *Scientific American*, CXCII: 74-80.

Gallagher, S. (2009). Two Problems of Intersubjectivity. *Journal of Consciousness Studies*, 16(6-7), 289-308.

Gallagher, S., & Varga, S. (2015). Conceptual issues in autism spectrum disorders. *Current Opinion in Psychiatry*, 28:127-132. <https://doi.org/10.1097/YCO.0000000000000142>

Gardner, H. (1982). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.

Gardner, H. (1993). *Multiple Intelligences: The Theory in Practice*. New York: Basic Books.

Garfinkel, S.N., et al. (2009). Psychophysiology of neural, cognitive and affective integration: fMRI and autonomic indicants. *Int J Psychophysiol*, 73(2), 88-94. <https://doi.org/10.1016/j.ijpsycho.2009.01.012>

Gelfand, M., Nishi, L.H., & Raver, J.L. (2006). On the Nature and Importance of Cultural Tightness-Looseness. *Journal of Applied Psychology*, 91(6), 1225-1244. <https://doi.org/10.1037/0021-9010.91.6.1225>

Gerbner, G., Gross, L., Morgan, M., Signorielli, N., & Shanahan, J. (2002). Growing up with television: Cultivation processes. In J. Bryant, D. Zillman (Eds.), *Media effects: Advances in theory and research, 2nd edition*, pp. 43-68. Mahwah NJ: Lawrence Erlbaum.

Gilbert, D. (1998). Ordinary Personology. In, D.T. Gilbert, S.T. Fiske & G. Lindzey (Eds.), *The Handbook of Social Psychology*, pp. 89-150. Boston: McGraw-Hill.

Gilbert, P. (2015). An Evolutionary Approach to Emotion in Mental Health With a Focus on Affiliative Emotions. *Emotion Review*, 7(3), 230-237. <https://doi.org/10.1177/1754073915576552>

Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.

Gintis, H. (2007). The evolution of private property. *Journal of Economic Behavior & Organization*, 64(1), 1-16. <https://doi.org/10.1016/j.jebo.2006.02.002>

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York: Anchor.

Goffman, E. (1967). *Interaction Ritual: Essays on Face-to-face Behavior*. New York: Anchor.

Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience*. New York: Harper & Row.

Goldberg, L.R. (1981). Language and individual differences: The search for universals in

personality lexicons. In L. Wheeler (Ed.), *Review of Personality and Social Psychology*, 2, 141-165. Beverly Hills, CA: Sage.

Goldberg, L.R. (1990). An Alternative "Description of Personality": The Big-Five Factor Structure. *Journal of Personality and Social Psychology*, 59(6), 1216-1229. <https://doi.org/10.1037/0022-3514.59.6.1216>

Goldman, A.I. (2011). Two Routes to Empathy. In, A. Coplan & P. Goldie (Eds.), *Empathy: Philosophical and Psychological Perspectives*, pp. 31-44. New York: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199539956.003.0004>

Gopnik, A., Meltzoff, A.N., & Kuhl, P.K. (1999). *The Scientist in the Crib: What Early Learning Tells Us About the Mind*. New York: Harper Perennial.

Gould, S.J. (1985). *Ontogeny and Phylogeny*. Cambridge, MA: Belknap Press.

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the Moral Domain. *Journal of Personality and Social Psychology*, 101(2), 366–385. <https://doi.org/10.1037/a0021847>

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S., & Ditto, P. H. (2012). Moral Foundations Theory: The Pragmatic Validity of Moral Pluralism. *Advances in Experimental Social Psychology*, 47, 55-130. <https://doi.org/10.1016/B978-0-12-407236-7.00002-4>

Gratier, M., & Trevarthen, C. (2008). Musical Narrative and Motives for Culture in Mother–Infant Vocal Interaction. *Journal of Consciousness Studies*, 15(10–11), 122-158. <https://doi.org/>

Graziano, M.S.A., & Kastner, S. (2011). Human consciousness and its relationship to social neuroscience: A novel hypothesis. *Cognitive Neuroscience*, 2(2), 98-133.

Greenspan, S.I., & Shanker, S.G. (2004). *The First Idea: How Symbols, Language, and Intelligence Evolved From Our Primate Ancestors to Modern Humans*. Cambridge, MA: Da Capo Press.

Grimshaw, G.M., & Carmel, D. (2014). An asymmetric inhibition model of hemispheric differences in emotional processing. *Frontiers in Psychology*, 5(489), 1-7. <https://doi.org/10.3389/fpsyg.2014.00489>

Gross, J.J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2(3), 271–299. <https://doi.org/10.1037/1089-2680.2.3.271>

Gross, J.J., & Barrett, L.F. (2011). Emotion Generation and Emotion Regulation: One or Two Depends on Your Point of View. *Emotion Review*, 3(1), 8–16. <https://doi.org/10.1177/1754073910380974>

Guendelman, S., Medeiros, S., & Rampes, H. (2017). Mindfulness and Emotion Regulation: Insights from Neurobiological, Psychological, and Clinical Studies. *Frontiers in Psychology*, 8, 1-23. <https://doi.org/10.3389/fpsyg.2017.00220>

Guerra, V.M., & Giner-Sorolla, R. (2010). The Community, Autonomy, and Divinity Scale (CADS): A New Tool for the Cross-Cultural Study of Morality. *Journal of Cross-Cultural Psychology*, 41, 35-50. <https://doi.org/10.1177/0022022109348919>

Gurtman, M.B. (1997). Studying Personality Traits: The Circular Way. In, R. Plutchik & H.R. Conte (Eds.), *Circumplex Models of Personality and Emotion*, pp. 81-102. Washington, D.C.: American Psychological Association.

Gurtman, M.B. (2009). Exploring Personality with the Interpersonal Circumplex. *Social and Personality Psychology Compass*, 3, 1-19. <https://doi.org/10.1111/j.1751-9004.2009.00172.x>

Habermas, J. (1979). *Communication and the Evolution of Society*. Boston, MA: Beacon Press.

Habermas, J. (1990). *Moral Consciousness and Communicative Action*. Cambridge, MA: The MIT Press.

Habermas, J. (1991). *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, MA: The MIT Press.

Hagy, J. (2012). Plutchik's Wheel of Emotions. [Indexed.com](http://indexed.com), Accessed July 21, 2016.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814-834.

Haidt, J. (2003). The Moral Emotions. In, R.J. Davidson, K.R. Scherer & H.H. Goldsmith (Eds.), *Handbook of affective sciences*, pp. 852-870. New York: Oxford University Press.

Haidt, J. (2012). *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. New York: Vintage.

Haidt, J., & Bjorklund, F. (2008). Social intuitionists answer six questions about moral psychology. In, W. Sinnott-Armstrong (Ed.), *Moral Psychology, Volume 2, The Cognitive Science of Morality: Intuition and Diversity*, pp. 181-217. Cambridge, MA: The MIT Press.

Haidt, J., & Graham, J. (2007). When Morality Opposes Justice: Conservatives Have Moral Intuitions that Liberals may not Recognize. *Social Justice Research*, 20, 98-116.

Haidt, J., Graham, J., & Joseph, C.M. (2009). Above and Below Left-Right: Ideological Narratives and Moral Foundations. *Psychological Inquiry*, 20, 110-119. <https://doi.org/10.1080/10478400903028573>

Haidt, J., & Kesebir, S. (2010). Morality. In, S. Fiske, D. Gilbert & G. Lindzey (Eds.) *Handbook of Social Psychology*, 5th Edition, pp. 797-832. Hoboken, NJ: Wiley.

Hamilton, W.D. (1964). The genetical evolution of social behaviour. *Journal of Theoretical Biology*, 7, 1-16, 17-52. [https://doi.org/10.1016/0022-5193\(64\)90039-6](https://doi.org/10.1016/0022-5193(64)90039-6)

Hanel, P.H.P., & Vione, K.C. (2016). Do Student Samples Provide an Accurate Estimate of the General Public? *PLoS ONE*, 11(12), e0168354. <https://doi.org/10.1371/journal.pone.0168354>



Hanson, R. (2009). *Buddha's Brain: The Practical Neuroscience of Happiness, Love, and Wisdom*. Oakland, CA: New Harbinger Publications.

Hanson, R. (2013). *Hardwiring Happiness: the new brain science of contentment, calm, and confidence*. New York: Penguin.

Harmon-Jones, E., Gable, P.A., & Peterson, C.K. (2010). The role of asymmetric frontal cortical activity in emotion-related phenomena: A review and update. *Biological Psychology*, 84, 451–462.

Harris, L.T., Cikara, M., & Fiske, S.T. (2008). Envy as Predicted by the Stereotype Content Model: A Volatile Ambivalence. In R. Smith (Ed.), *Envy: Theory and Research*, pp. 133-147. New York: Oxford University Press.

Haslam, N. (1994). Categories of Social Relationship. *Cognition*, 53, 59-90. [https://doi.org/10.1016/0010-0277\(94\)90077-9](https://doi.org/10.1016/0010-0277(94)90077-9)

Haslam, N. (2002). Natural kinds, practical kinds, and psychiatric categories. *Psychology*, 13, 203-217.

Haslam, N. (2006). Dehumanization: An Integrative Review. *Personality and Social Psychology Review*, 10(3), 252–264. [https://doi.org/10.1207/s15327957pspr1003\\_4](https://doi.org/10.1207/s15327957pspr1003_4)

Hayek, F. (1988). *The Fatal Conceit*. Chicago: University of Chicago Press.

Hayes, S.C. (2004). Acceptance and Commitment Therapy, Relational Frame Theory, and the Third Wave of Behavioral and Cognitive Therapies. *Behavior Therapy*, 35, 639-665.

Hayes, S.C., Strosahl, K.D., & Wilson, K.G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: The Guilford Press.

Hayes, S.C., Barnes-Holmes, D., & Roche, B. (2001). *Relational Frame Theory A Post-Skinnerian Account of Human Language and Cognition*. New York: Plenum.

Hayes, S.C., & Sanford, B.T. (2015). Modern Psychotherapy as a Multidimensional Multilevel Evolutionary Process. *Current Opinion in Psychology*, 2, 16–20. <https://doi.org/10.1016/j.copsyc.2015.01.009>

Heider, F. (1979). On Balance and Attribution. In P.W. Holland & Leinhardt (Eds.). *Perspectives on Social Network Research, Center for Advanced Study in the Behavioral Sciences*, pp. 11-23. New York: Academic Press.

Heise, D.R. (2006). *Expressive Order: Confirming Sentiments in Social Actions*. New York: Springer.

Heise, D.R. (2010). *Surveying Cultures: Discovering Shared Conceptions and Sentiments*. New York: Wiley.

Heimpel, S.A., Elliot, A.J., & Wood, J.V. (2006). Basic Personality Dispositions, Self-Esteem, and

Personal Goals: An Approach-Avoidance Analysis. *Journal of Personality*, 74(5), 1293-1320.

Hendriks, J., Hofstee, W.K.B., & de Raad, B. (1999). The Five Factor Personality Inventory (FFPI). *Personality and Individual Differences*, 27, 296-214.

Henrich, J., & Gil-White, F.J. (2001). The evolution of prestige: Freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. *Evolution & Human Behavior*, 22(3), 165-196.

Henrich, J., Heine, S.J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*. 33, 61–135. <https://doi.org/10.1017/S0140525X0999152X>

Hertwig, R., Hoffrage, U., & The ABC Research Group. (2013). *Simple Heuristics in a Social World*. New York: Oxford University Press.

Howe, J. (2007). *Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business*. New York: Three Rivers Press.

Hrdy, S.B. (2009). *Mothers and Others: The Evolutionary Origins of Mutual Understanding*. Cambridge, MA: Belknap Press.

Hochschild, A.R. (1975). The Sociology of Feeling and Emotion: Selected Possibilities. *Sociological Inquiry*, 45(2-3), 280-307. <https://doi.org/10.1111/j.1475-682X.1975.tb00339.x>

Hofstee, W.K.B., de Raad, B., & Goldberg, L.R. (1992). Integration of the Big Five and circumplex approaches to trait structure. *Journal of Personality and Social Psychology*, 63, 146-163.

Hudson, M. (2003). *Super Imperialism: The Origin and Fundamentals of U.S. World Dominance*. New York: Pluto Press.

Hurley, D. (2015). Grandma's Experiences Leave a Mark on Your Genes. *Discover Magazine*, Accessed June 25, 2015.

Hurley, M.M., Dennett, D.C., & Adams Jr., R.B. (2011). *Inside Jokes: Using Humor to Reverse-Engineer the Mind*. Cambridge, MA: The MIT Press.

Huron, D. (2006). *Sweet Anticipation: Music and the Psychology of Expectation*. Cambridge, MA: The MIT Press.

Iacoboni, M., & Dapretto, M. (2006). The mirror neuron system and the consequences of its dysfunction. *Nature Reviews Neuroscience*, 7, 942-951.

Immordino-Yang, M.H. (2016). Emotion, Sociality, and the Brain's Default Mode Network: Insights for Educational Practice and Policy. *Policy Insights from the Behavioral and Brain Sciences*, 1-9. London: Sage. <https://doi.org/10.1177/2372732216656869>

Igelström, K.M., Webb, T.W., Kelly, Y.T., & Graziano, M.S.A. (2016). Topographical Organization of Attentional, Social, and Memory Processes in the Human Temporoparietal Cortex. *ENeuro*, 3(2), 1-12.

- Igelström, K.M., Webb, T.W., & Graziano, M.S.A. (2017). Functional Connectivity Between the Temporoparietal Cortex and Cerebellum in Autism Spectrum Disorder. *Cerebral Cortex*, 27, 2617–2627.
- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding Libertarian Morality: The Psychological Dispositions of Self-Identified Libertarians. *PLoS ONE*, 7(8), e42366. <https://doi.org/10.1371/journal.pone.0042366>
- Jablonka, E., & Lamb, M.J. (2005). *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*. Cambridge, MA: The MIT Press.
- Janoff-Bulman, R., Sheikh, S., & Hepp, S. (2009). Proscriptive Versus Prescriptive Morality: Two Faces of Moral Regulation. *Journal of Personality and Social Psychology*, 96(3), 521–537.
- Janoff-Bulman, R., & Sheikh, S. (2011). Unintended Consequences of Moral Over-Regulation. *Emotion Review*, 3, 325. <https://doi.org/10.1177/1754073911402379>
- Janoff-Bulman, R., & Carnes, N.C. (2013). Surveying the Moral Landscape: Moral Motives and Group-Based Moralities. *Personality and Social Psychology Review*, 17(3), 242–247. <https://doi.org/10.1177/1088868313480274>
- Janoff-Bulman, R., & Carnes, N.C. (2013). Moral Context Matters: A Reply to Graham. *Personality and Social Psychology Review*, 17(3), 219–236. <https://doi.org/10.1177/1088868313480274>
- Janoff-Bulman, R., & Carnes, N.C. (2016). Social Justice and Social Order: Binding Moralities across the Political Spectrum. *PLoS ONE*, 11(3), e0152479. <https://doi.org/10.1371/journal.pone.0152479>
- Jaynes, J. (1976). *The Origin of Consciousness in the Breakdown of the Bicameral Mind*. Boston, MA: Houton Mifflin Company.
- Joseph, C., Graham, J., & Haidt, J. (2009). The End of Equipotentiality: A Moral Foundations Approach to Ideology-Attitude Links and Cognitive Complexity. *Psychological Inquiry*, 20(2), 172–176. <https://doi.org/10.1080/10478400903088882>
- Jost, J.T. (2006). The End of the End of Ideology. *American Psychologist*, 61(7), 651–670. <https://doi.org/10.1037/0003-066X.61.7.651>
- Jost, J.T., Glaser, J., Kruglanski, A., & Sulloway, F.J. (2003). Political Conservatism as Motivated Social Cognition. *Psychological Bulletin*, 129(3), 339–375.
- Kahan, D.M., Braman, D., Gastil, J., Slovic, P., & Mertz, C.K. (2007). Culture and Identity-Protective Cognition: Explaining the White Male Effect in Risk Perception. *Journal of Empirical Legal Studies*, 4(3), 465–505. Yale Law School, Public Law Working Paper No. 152. Available at SSRN: <https://ssrn.com/abstract=995634>
- Kahan, D.M., Braman, D., Slovic, P., Gastil, J., & Cohen, G. (2009). Cultural cognition of the risks and benefits of nanotechnology. *Nature Nanotechnology*, 4, 87–90. <https://doi.org/10.1038/>



[nnano.2008.341](https://doi.org/10.1177/0956797608314141)

Kahan, D.M., Jenkins-Smith, H., & Braman, D. (2011). Cultural Cognition of Scientific Consensus. *Journal of Risk Research*, 14(4), 147-174. <https://doi.org/10.1080/13669877.2010.511246>

Kahan, D.M., Peters, E., Braman, D., & Mandel, G.N., *et al.* (2011). The Tragedy of the Risk-Perception Commons: Culture Conflict, Rationality Conflict, and Climate Change. *SSRN Electronic Journal*. <https://doi.org/10.2319/ssrn.1871503>

Kahneman, D., & Frederick, S. (2002). Representativeness Revisited: Attribute Substitution in Intuitive Judgment. In, T. Gilovich, D. Griffin, and D. Kahneman (Eds.), *Heuristics and Biases: The Psychology of Intuitive Thought*, pp. 49–81. New York: Cambridge University Press.

Kay, P., & McDaniell, C.K. (1978). The Linguistic Significance of the Meanings of Basic Color Terms. *Language*, 54(3), 610-646.

Keller, H., Yovsi, R., Borke, J., Kartner, J., Jensen, H., & Papaligoura, Z. (2004). Developmental Consequences of Early Parenting Experiences: Self- Recognition and Self-Regulation in Three Cultural Communities. *Child Development*, 75(6), 1745-1760.

Keller, H., Kartner, J., & Yovsi, R.D. (2010). Mother–Infant Interaction During the First 3 Months: The Emergence of Culture-Specific Contingency Patterns. *Child Development*, 80(2), 540-554.

Keller, H. (2013). Attachment and Culture. *Journal of Cross-Cultural Psychology*, 44, 175-194.

Keller, H. (2016). Attachment: A pancultural need but a cultural construct. *Current Opinion in Psychology*, 8, 59-63.

Keltner, D. (1995). Signs of Appeasement: Evidence for the Distinct Displays of Embarrassment, Amusement, and Shame. *Journal of Personality and Social Psychology*, 68(3), 441-454.

Keltner, D., & Buswell, B.N. (1996). Evidence for the Distinctness of Embarrassment, Shame, and Guilt: A Study of Recalled Antecedents and Facial Expressions of Emotion. *Cognition And Emotion*, 10(2), 155-171.

Keltner, D., & Haidt, J. (1999). Social Functions of Emotions at Four Levels of Analysis. *Cognition And Emotion*, 13(5), 505-521.

Kemper, T.D. (1978). *A Social Interactional Theory of Emotions*. New York: John Wiley & Sons.

Kemper, T.D. (1987). How many emotions are there? Wedding the social and autonomic components. *American Journal of Sociology*, 93(2), 263–289.

Kemper, T.D. (1990). *Social Structure and Testosterone: Explorations in the Socio-Bio-Social Chain*. Camden, NJ: Rutgers University Press.

Kemper, T.D. (1990). Social Relations and Emotions: A Social Structural Approach. In, T.D. Kemper (Ed.), *Research Agendas in the Sociology of Emotion*, pp. 207-237. Albany: State University of New York Press.

Kemper, T.D. (2007). Power and Status and the Power-Status Theory of Emotions. In, J.E. Stets & J.H. Turner (Eds.), *Handbook of the Sociology of Emotions*, pp. 87-113. New York: Springer.

Kemper, T.D. (2011). *Status, Power and Ritual Interaction: A Relational Reading of Durkheim, Goffman and Collins*. New York: Ashgate.

Kemper, T.D., & Collins, R. (1990). Dimensions of microinteraction. *American Journal of Sociology*, 96(2), 32–68.

Kervyn, K., Fiske, S.T., & Yzerbyt, V.Y. (2013). Integrating The Stereotype Content Model And The Osgood Semantic Differential. *European Journal Social Psychology*, 43(7), 673–681.

Kihlstrom, J.A. (2011-01-26). "Scientific Approaches to Consciousness (Spring 2011, UC Berkeley)." Lecture audio. Psychology C129/Cognitive Science C102. MP3, Lecture 3. Accessed May 17, 2014. (Web address removed by UC Berkeley)

Kim, J., Lee, S., Fang, YY. et al. (2019). Rapid, biphasic CRF neuronal responses encode positive and negative valence. *Nat Neurosci*, 22, 576–585. <https://doi.org/10.1038/s41593-019-0342-2>

Kim, S.I. (2013). Neuroscientific model of motivational process. *Frontiers in Psychology*, 4, 98.

Kohlberg, L. (1981). *The Philosophy of Moral Development: Essays on Moral Development*. San Francisco, CA: Harper & Row.

Koleva, S.P., Graham, J., Iyer, R., Ditto, P.H., & Haidt, J. (2012). Tracing the threads: How five moral concerns (especially Purity) help explain culture war attitudes. *Journal of Research in Personality*, 46, 184-194.

Korzybski, A. (1933/1995). *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics*. Chicago: Institute of General Semantics.

Koestler, A. (1970). Beyond atomism and holism—the concept of the holon. *Perspectives in Biology and Medicine*, 13(2), 131-154.

Koski, L., Wohlschlager, A., Bekkering, H., Woods, R.P., Dubeau, M.C., Mazziotta, J.C., & Iacoboni, M. (2002) Modulation of motor and premotor activity during imitation of target-directed actions. *Cerebral Cortex*, 12, 847-855. <https://doi.org/10.1093/cercor/12.8.847>

Koster-Hale, J., & Saxe, R. (2013). Functional neuroimaging of theory of mind. In, S. Baron-Cohen, H. Tager-Flusberg & M.V. Lombardo (Eds.), *Understanding Other Minds: Perspectives from Developmental Social Neuroscience*, pp. 132-163. Oxford, UK: Oxford University Press. ISBN: 978-0-19-969297-2.

Kravits, K. (2008). The Stress Response and Adaptation Theory. In, N. Haas-Cohen & R. Carr (Eds.), *Art Therapy and Clinical Neuroscience*, pp. 111-127. London: Jessica Kingsley Publishers.

Kreibig, S.D. (2010). Autonomic Nervous System Activity in Emotion: A Review. *Biological Psychology*, 84, 394–421.

- Kugler, M., Jost, J.T., & Noorbaloochi, S. (2014). Another Look at Moral Foundations Theory: Do Authoritarianism and Social Dominance Orientation Explain Liberal-Conservative Differences in 'Moral' Intuitions? *Soc Just Res.* <https://doi.org/10.1007/s11211-014-0223-5>
- Kuhl, P.K., & Meltzoff, A.N. (1997). Evolution, Nativism and Learning in the Development of Language and Speech. In, M. Gopnik (Ed.), *The Inheritance and Innateness of Grammars*, pp. 7-44. New York: Oxford University Press.
- Kuhn, T.S. (1970). *The Structure of Scientific Revolutions, 2<sup>nd</sup> Edition*. Chicago: University of Chicago Press.
- Kühnen, U., Hannover, B., & Schubert, B. (2001). The Semantic-Procedural Interface Model of the Self: The Role of Self-Knowledge for Context-Dependent Versus Context-Independent Modes of Thinking. *Journal of Personality and Social Psychology*, 80(3), 397-409. <https://doi.org/10.1037/0022-3514.80.3.397>
- Laborde, S., Mosley, E., & Thayer, J.F. (2017). Heart Rate Variability and Cardiac Vagal Tone in Psychophysiological Research – Recommendations for Experiment Planning, Data Analysis, and Data Reporting. *Frontiers in Psychology*, 8(213), 1-18.
- Laird, J.D. (2007). *Feelings: The Perception of Self*. New York: Oxford University Press. ISBN 0-195-09889-7.
- Lakoff, G. (1987). *Women, Fire & Dangerous Things: What Categories Reveal About the Mind*. Chicago: University of Chicago Press. ISBN 0-226-46804-6.
- Lakoff, G. (2002). *Moral Politics: How Liberals and Conservatives Think*. Chicago: University of Chicago Press.
- Larsen, J.T., Berntson, G.G., Poehlmann, K.M., Ito, T.A., & Cacioppo, J.T. (2008). The Psychophysiology of Emotion. In, R. Lewis, J.M., Haviland-Jones, & L.F. Barrett (Eds.), *Handbook of Emotions, 3rd edition*, pp. 180-195. New York: The Guilford Press.
- Larsen, J.T., Ito, Y.M., & Fireman, G. (2007). Children's Understanding and Experience of Mixed Emotions. *Psychological Science*, 18(2), 186–191.
- Laycraft, K. (2011). Theory of Positive Disintegration As a Model of Adolescent Development. *Nonlinear Dynamics, Psychology, and Life Sciences*, 15(1), 29- 52.
- Laycraft, K. (2019). *Uncovering The Theory of Positive Disintegration*. Victoria, BC: First Choice Books.
- Leal-Arcas, R., & Morelli, A. (2018). The Resilience of the Paris Agreement: Negotiating and Implementing the Climate Regime. *The Georgetown Envtl. Law Review*, 31(1), 1-64.
- Leary, T. (1957). *Interpersonal Diagnosis of Personality*. New York: Ronald Press.
- Lehman, A. (2010). *Evolution, Autism & Social Change: A New Feminine Theory of Evolution*

*That Explains Autism*. Evanston, IL: [Neoteny.org](http://Neoteny.org)

Lemche, E., Chaban, O.S., & Lemche, A.V. (2016). Neuroendocrine and Epigenetic Mechanisms Subservicing Autonomic Imbalance and HPA Dysfunction in the Metabolic Syndrome. *Frontiers in Neuroscience*, 10(142), 1-27. <https://doi.org/10.3389/fnins.2016.00142>

LeRoy, F., *et al.* (2014). New human-specific brain landmark: The depth asymmetry of superior temporal sulcus. *PNAS*, early edition, 1-6. <https://doi.org/10.1073/pnas.1412389112>

Levenson, R.W. (1988). Emotion and the autonomic nervous system: A prospectus for research on autonomic specificity. In, H.L. Wager (Ed.), *Social Psychophysiology and Emotion: Theory and Clinical Applications*, pp. 17-42.

Levenson, R.W. (2014). The Autonomic Nervous System and Emotion. *Emotion Review*, 5(2), 100-112. <https://doi.org/10.1177/1754073913512003>

Levine, P.A. (2010). In, *An Unspoken Voice: How the Body Releases Trauma and Restores Goodness*. Berkeley, CA: North Atlantic Books.

Lewis, D.K. (1969). *Convention: A philosophical study*. Cambridge, MA: Harvard University Press.

Lewis, H.B. (1971). *Shame and Guilt in Neurosis*. New York: International Universities Press.

Liu, J., Lughofer, E., & Zeng, X. (2015). Aesthetic perception of visual textures: a holistic exploration using texture analysis, psychological experiment, and perception modeling. *Front. Comput. Neurosci.*, 9(134), 1-14. <https://doi.org/10.3389/fncom.2015.00134>

Lively, K.J. (2008). Emotional Segues and the Management of Emotion by Women and Men. *Social Forces*, 87(2), 911-936.

Lively, K.J., & Heise, D.R. (2004). Sociological Realms of Emotional Experience. *AJS*, 109(5), 1109-36. <https://doi.org/10.1086/381915>

Lively, K.J., & Heise, D.R. (2014). Emotions in Affect Control Theory. In, J.E. Stets, J.H. Turner (Eds.), *Handbook of the Sociology of Emotions: Volume II*, Handbooks of Sociology and Social Research, Dordrecht: Springer Science+Business Media. [https://doi.org/10.1007/978-94-017-9130-4\\_4](https://doi.org/10.1007/978-94-017-9130-4_4)

Lövheim, H. (2012). A new three-dimensional model for emotions and monoamine neurotransmitters. *Medical Hypotheses*, 78, 341-348. <https://doi.org/10.1016/j.mehy.2011.11.016>

Mackie, D.M., Smith, E.R., & Ray, D.G. (2008). Intergroup Emotions and Intergroup Relations. *Social and Personality Psychology Compass*, 2/5, 1866-1880. <https://doi.org/10.1111/j.1751-9004.2008.00130.x>

MacKinnon, N.J. (1994). *Symbolic Interactionism as Affect Control*. Albany: State University of New York Press.

MacKinnon, N.J., & Heise, D.R. (2010). *Self, Identity, and Social Institutions*. New York: Palgrave

Macmillan.

Marshall, J. (1995). *To Have and Have Not: Southeast Asian Raw Materials and the Origins of the Pacific War*. Berkeley, CA: University of California Press.

Martin, R. (2007). *An Empire of Indifference: American War and Financial Logic of Risk Management*. Durham, NC: Duke University Press.

Masters, K.S., & Bergin, A.E. (1992). Religious Orientation and Mental Health. In, J.F. Schumaker (Ed.), *Religion and Mental Health*, pp. 221-232. New York: Oxford University Press.

Maturana, H., & Varela, F. (1987). *The Tree of Knowledge: The Biological Roots of Human Understanding*. Boston, MA: Shambhala. ISBN 0-87773-373-2

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty Impedes Cognitive Function. *Science*, 341, 976. <https://doi.org/10.1126/science.1238041>

Markus, H.R., & Kitayama, S. (1991). Culture and the Self: Implications for Cognition, Emotion, and Motivation. *Psychological Review*, 98(2): 224-253. <https://doi.org/10.1037/0033-295X.98.2.224>

Maynard Smith, J., & Price, G.R. (1973). The logic of animal conflict. *Nature*, 246, 15–18.

McCluhan, M. (1994). *Understanding Media*. Cambridge, MA: The MIT Press.

McCormick, C.C., & Goldberg, L.R. (1997). Two At A Time Is Better Than One At A Time: Exploiting The Horizontal Aspects Of Factor Representations. In, R. Plutchik & H.R. Conte (Eds.), *Circumplex Models of Personality and Emotion*, pp. 103-132. Washington, D.C.: American Psychological Association.

McCrae, R.R., & Costa, P.T. (1989a). Reinterpreting the Myers-Briggs Type Indicator From the Perspective of the Five-Factor Model of Personality. *Journal of Personality*, 57, 17-40.

McCrae, R.R., & Costa, P.T. (1989b). The Structure of Interpersonal Traits: Wiggins's Circumplex and the Five-Factor Model. *Journal of Personality and Social Psychology*, 56(4), 586-595.

McCrae, R.R., & Costa, P.T., Jr. (1997). Personality Trait Structure as a Human Universal. *American Psychologist*, 52(5), 509-516. <https://doi.org/10.1037//0003-066x.52.5.509>

McCraty, R. (2015). Hear-Brain Neurodynamics: The Making of Emotions. In Issues of the Heart: In, M. Dahlitz & G. Hall, (Eds.), *The Neuropsychotherapist special issue*, pp. 76-110. Dahlitz Media: Brisbane.

McCraty, R., Atkinson, M., Tomasino, D., & Bradley, R.T. (2006). *The Coherent Heart: Heart–Brain Interactions, Psychophysiological Coherence, and the Emergence of System-Wide Order*. Boulder Creek, CA: Institute of HeartMath.

McCraty, R., & Childre, D. (2010). Coherence: Bridging Personal, Social, And Global Health. *Alternative Therapies*, 16(4), 10-24.



- McCraty, R., & Shaffer, F. (2015). Heart Rate Variability: new perspectives on physiological Mechanisms, assessment of self-regulatory Capacity, and Health risk. *Global Advances in Health Medicine*, 4(1):46-61.
- McDuffie, A., Turner, L., Stone, W., Yoder, P., Wolery, M., & Ulman, T. (2007). Developmental Correlates of Different Types of Motor Imitation in Young Children with Autism Spectrum Disorders. *J Autism Dev Disord*, 37, 401–412. <https://doi.org/10.1007/s10803-006-0175-1>
- McElreath, R., & Boyd, R. (2007). *Mathematical Models of Social Evolution. A Guide for the Perplexed*. Chicago: University of Chicago Press.
- McIntosh, S. (2016). *Overcoming Polarization by Evolving Both Right and Left*. Boulder, CO: Institute for Cultural Evolution.
- McIntosh, S. (2017). *Growing Out of America's Divided Culture*. Boulder, CO: Institute for Cultural Evolution.
- Menon, V., & Uddin, L.Q. (2010). Saliency, switching, attention and control: a network model of insula function. *Brain Structure and Function*, 214, 655–667. <https://doi.org/10.1007/s00429-010-0262-0>
- Menon, V. (2015). Salience Network. In, A.W. Toga (Ed.), *Brain Mapping: An Encyclopedic Reference*, vol. 2, pp. 597-611. Academic Press: Elsevier. <https://doi.org/10.1016/B978-0-12-397025-1.00052-X>
- Mercier, H., & Sperber, D. (2011). Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences*, 34(2), 57-74. <https://doi.org/10.1017/S0140525X10000968>
- Merker, B. (2007). Consciousness without a cerebral cortex: A challenge for neuroscience and medicine. *Behavioral and Brain Sciences*, 30(1), 63-134. <https://doi.org/10.1017/S0140525X07000891>
- Mesoudi, A. (2011). Variable cultural acquisition costs constrain cumulative cultural evolution. *PLoS ONE*, 6(3), e18239 . <https://doi.org/10.1371/journal.pone.0018239>
- Mesoudi, A., Whitten, K., & Laland, K. (2006). Towards a Unified Science of Cultural Evolution. *Behavioral and Brain Sciences*, 29, 329-383.
- Mitani, J.C. (2009). Cooperation and competition in chimpanzees: Current understanding and future challenges. *Evolutionary Anthropology*, 18, 215–227. <https://doi.org/10.1002/evan.20229>
- Mithen, S. (2005). *The Singing Neanderthals: The Origins of Music, Language, Mind and Body*. London, UK: Orion Publishing Group.
- Mittelberg, I. (2019). Peirce's universal categories: On their potential for gesture theory and multimodal analysis. *Semiotica*, 228, 193–222. <https://doi.org/10.1515/sem-2018-0090>

Mittelberg, I., & Waugh, L.R. (2014). Gestures and Metonymy. In, Muller, *et al.* (Eds.), *Body - Language - Communication: An International Handbook on Multimodality in Human Communication (HSK 38.2)*, pp. 1747-1766. Berlin: DeGruyter Mouton.

Molden, D.C. (2014). Understanding Priming Effects In Social Psychology: What Is “Social Priming” And How Does It Occur? *Social Cognition*, 32, Special Issue, 1–11. <https://doi.org/10.1521/soco.2014.32.suppl.243>

Molden, D.C., & Dweck, C.S. (2006). Finding “Meaning” in Psychology: A Lay Theories Approach to Self-Regulation, Social Perception, and Social Development. *American Psychologist*, 61(3), 192-203. <https://doi.org/10.1037/0003-066X.61.3.192>

Molden, D.C., Plaks, J.E., & Dweck, C.S. (2006). ‘Meaningful’ social inferences: Effects of implicit theories on inferential processes. *Journal of Experimental Social Psychology*, 42, 738–752. <https://doi.org/10.1016/j.jesp.2005.11.005>

Molnar-Szakacs, I., Wang, M., Laugeson, E.A., Overy, K., Wu, W., & Piggot, J. (2009). Autism, Emotion Recognition and the Mirror Neuron System: The Case of Music. *McGill journal of medicine : MJM*, 12(2), 87-98.

Morgan, D.L. (2007). Paradigms Lost and Pragmatism Regained: Methodological Implications of Combining Qualitative and Quantitative *Methods*. *Journal of Mixed Methods Research*, 1(1), 48-76. <https://doi.org/10.1177/2345678906292462>

Morgan, R.L., & Heise, D.R. (1988). Structure of Emotions. *Social Psychology Quarterly*, 51(1), 19-31.

Movius, H.L., & Allen, J.J.B. (2005). Cardiac Vagal Tone, defensiveness, and motivational style. *Behavioral Psychology*, 68, 147-162.

Mowrer, H.O. (1960). *Learning Theory and Behavior*. New York: Wiley.

Mundy, P.C., & Neal, R. (2001). Neural Plasticity, Joint Attention and a Transactional Social-Orienting Model of Autism. In L. Glidden (Ed.), *International Review of Research in Mental Retardation*, 23, 139-168. New York: Academic Press.

Mundy, P., & Sigman, M. (1989). The theoretical implications of joint attention deficits in autism. *Development and Psychopathology*, 1, 173-183.

Myers, I.B., & McCaulley M.H. (1985). *Manual A guide to the development and use of the Myers-Bnngs Type Indicator*. Palo Alto: Consulting Psychologists Press.

Nail, P.R., McGregor, I., Drinkwater, A.E., Steele, G.M., & Thompson, A.W. (2009). Threat causes liberals to think like conservatives. *Journal of Experimental Social Psychology*, 45, 901–907.

Needham, R. (1963). Introduction. In, E. Durkheim & M. Mauss, *Primitive Classification*, pp. i-xxxii. London: Cohen & West.

Neff, K.D. (2011). Self-Compassion, Self-Esteem and Well-Being. *Social and Personality*

*Psychology Compass*, 5(1), 1-12. <https://doi.org/10.1111/j.1751-9004.2010.00330.x>

Neuhaus, E., Bernier, R., & Beauchaine, T.P. (2014). Brief Report: Social Skills, Internalizing and Externalizing Symptoms, and Respiratory Sinus Arrhythmia in Autism. *J Autism Dev Disord*, 44, 730–737. <https://doi.org/10.1007/s10803-013-1923-7>

Nielsen, M., Daniel Haun, D., Kärtner, J., & Legare, C.H. (2017). The persistent sampling bias in developmental psychology: A call to action. *Journal of Experimental Child Psychology*, 162, 31–38.

Norenzayan, A., Choi I., & Nisbett, R.E. (2002). Cultural Similarities and Differences in Social Inference: Evidence From Behavioral Predictions and Lay Theories of Behavior. *Personality and Social Psychology Bulletin*, 28(1), 109-120.

Norman, G.J., Norris, C.J., Gollan, J., Ito, T.A., Hawkley, L.C., Larsen, J.T., Cacioppo, J.T., & Berntson, G.G.. (2011). Current Emotion Research in Psychophysiology: The Neurobiology of Evaluative Bivalence. *Emotion Review*, 3, 349–359. <https://doi.org/10.1177/1754073911402403>

North, M., & Fiske, S.T. (2013). Driven to Exclude: How Core Social Motives Explain Social Exclusion. In, C.N. DeWall (Ed.), *The Oxford Handbook of Social Exclusion*, pp. 31-42. New York: Oxford University Press.

O'Gorman, H.J. (1975). Pluralistic ignorance and White estimates of White support for racial segregation. *Public Opinion Quarterly*, 39.

Ochs, E., & Schieffelin, B.B. (1994). Language Acquisition and Socialization: Three Developmental Stories and Their Implications. In, B.G. Blount (Ed.), *Language Culture and Society: A Book of Readings, Second Edition*. New York: Waveland Press Inc.

Ochsner, K.N., & Barrett, L.F. (2001). A Multiprocess Perspective on the Neuroscience of Emotion. In, T. Mayne & G. Bonnano (Eds.), *Emotion: Current Issues and Future Directions*. New York: Guilford Press.

Orlić, A., Grahek, I., & Radović, T. (2014). The influence of valence and arousal on reasoning: Affective priming in the semantic verification task. *PSIHOLOGIJA*, 47(2), 201–213. <https://doi.org/10.2298/PSI1402201O>

Ortony, A., & Clore, G.L. (2015). Can an Appraisal Model Be Compatible with Psychological Constructionism? In L.F. Barrett & J.A. Russell (Eds.), *The Psychological Construction of Emotion*, pp. 305-333. New York: The Guilford Press.

Ortony, A., Clore, G.L., & Collins, A. (1988). *The Cognitive Structure of Emotion*. New York: Cambridge University Press.

Ortony, A., Clore, G.L., & Foss, M.A. (1987). The Referential Structure of the Affective Lexicon. *Cognitive Science* 11(3), 341-64.

Ortony, A., & Turner, T.J. (1990). What's basic about basic emotions? *Psychological Review*, 97, 315–331.



- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge University Press.
- Ostrom, E. (2010). Beyond Markets and States: Polycentric Governance of Complex Economic Systems. *American Economic Review*, 100, 1-33.
- Ottaviani, C., Mancini, F., Petrocchi, N., Medea, B., & Couyoumdjian, A. (2013). Autonomic correlates of physical and moral disgust. *International Journal of Psychophysiology*, 89(1), 57-62. <https://doi.org/10.1016/j.ijpsycho.2013.05.003>
- Osgood, C., Suci, G., & Tannenbaum, P. (1962). *The Measurement of Meaning*. Urbana: University of Illinois Press.
- Otsuka, Y. (2014). Face recognition in infants: A review of behavioral and near-infrared spectroscopic studies. *Japanese Psychological Research*, 56(1), 76-90.
- Oyserman, D., & Lee, S.W.S. (2008). Does Culture Influence What and How We Think? Effects of Priming. *Psychological Bulletin*, 134(2), 311-342. <https://doi.org/10.1037/0033-2909.134.2.311>
- Pachur, T., Hertwig, R., & Rieskamp, J. (2013). Intuitive judgments of social statistics: How exhaustive does sampling need to be? *Journal of Experimental Social Psychology*, 49, 1059-1077.
- Panksepp, J. (1998). *Affective Neuroscience*. New York: Oxford University Press.
- Panksepp, J. (2011). The basic emotional circuits of mammalian brains: do animals have affective lives? *Neurosci. Biobehav. Rev.*, 35, 1791-1804.
- Panksepp, J., & Trevarthen, C. (2008). The neuroscience of emotion in music. In, S. Malloch & C. Trevarthen (Eds.), *Communicative Musicality: Exploring the basis of human companionship*, pp. 105-146. New York: Oxford University Press. ISBN: 978-0198566281.
- Pantelis, P.C., Byrge, L., Tyszka, J.M., Adolphs, R., & Kennedy, D.P. (2015). A specific hypoactivation of right temporo-parietal junction/posterior superior temporal sulcus in response to socially awkward situations in autism. *SCAN*, 10, 1348-1356. <https://doi.org/10.1093/scan/nsv021>
- Penfield, W., & Jasper, H.H. (1954). *Epilepsy and the functional anatomy of the human brain*. New York: Little, Brown.
- Pessoa, L. (2015). Précis on The Cognitive-Emotional Brain. *Behavioral and Brain Sciences*, 38, 1-66. <https://doi.org/10.1017/S0140525X14000120>
- Piaget, J. (1932). *The Moral Judgement of the Child*. London: Kegan Paul.
- Pincus, A.L., Gurtman, M.B., & Ruiz, M.A. (1998). Structural Analysis of Social Behavior (SASB), Circumplex Analyses and Structural Relations With the Interpersonal Circle and the Five-Factor Model of Personality. *Journal of Personality and Social Psychology*, 74(6), 1629-1645.
- Plutchik, R. (1962/1991). *The Emotions: Facts, Theories, and a New Model*. Lanham, MD:

University Press of America, Inc.

Plutchik, R. (1979). Universal problems of adaptation: Hierarchy, territoriality, identity, and temporality. In, J.B. Calhoun (Ed.), *Perspectives on adaptation, environment and population*. New York: Praeger.

Plutchik, R. (1980a). *Emotion: An Evolutionary Synthesis*. New York: Harper & Row.

Plutchik, R. (1980b). A General Psychoevolutionary Theory of Emotion. In, Plutchik & H. Kellerman (Eds.), *EMOTION Theory, Research, and Experience, Volume 1 Theories of Emotion*, pp. 3-33. New York: Academic Press.

Plutchik, R. (2001). The Nature of Emotions. *American Scientist*, 89, 344-350.

Porges, E., & Decety, J. (2015). Individual differences in vagal regulation are related to testosterone responses to observed violence. *Frontiers in Psychology*, 6(19), 1-10.

Porges, S.W. (1995). Orienting in a Defensive World: Mammalian Modifications of Our Evolutionary Heritage, A Polyvagal Theory. *Psychophysiology*, 32, 301-318.

Porges, S.W. (1997). Emotion: An evolutionary by-product of the neural regulation of the autonomic nervous system. In, C.S. Carter, I.I. Lederhendler & B. Kirkpatrick (Eds.), *The Integrative Neurobiology of Affiliation*. Annals of the New York Academy of Sciences.

Porges, S.W. (1998). Love: An Emergent Property Of The Mammalian Autonomic Nervous System. *Psychoneuroendocrinology*, 23(8), 837-861.

Porges, S.W. (2001). The Polyvagal Theory: Phylogenetic Substrates of a Social Nervous System. *International Journal of Psychophysiology*, 42, 123-146.

Porges S.W. (2003). Social engagement and attachment: A phylogenetic perspective. *Roots of Mental Illness in Children*, Annals of the New York Academy of Sciences 1008, 31-47.

Porges S.W., & Furman, S.A. (2011). The Early Development of the Autonomic Nervous System Provides a Neural Platform for Social Behavior: A Polyvagal Perspective. *Infant Child Development*, 20(1), 106-118. <https://doi.org/10.1002/icd.688>

Porges S.W., & Carter, C.S. (2012). Mechanisms, Mediators, and Adaptive Consequences of Caregiving. In, S.L. Brown, R.M. Brown & L.A. Penner (Eds.), *Moving Beyond Self-Interest: Perspectives from Evolutionary Biology, Neuroscience, and the Social Sciences*, pp. 53-74. New York: Oxford University Press.

Posner, J., Russell, J.A., & Peterson, B.S. (2005). An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and Psychopathology*, 17, 715-734. <https://doi.org/10.1017/S0954579405050340>

Postman, N. (2005). *Amusing Ourselves to Death: Public Discourse in the Age of Show Business, 20<sup>th</sup> Anniversary Edition*. New York: Penguin Books.

Powers, W.T. (1973). *Behavior: The Control of Perception*. New York: Aldine Transaction.

Powers, W.T., Abbot, B., Carey, T.A., Goldstein, D.M., Mamsell, W., Marken, R.S., Nevin, B., Robertson, R., & Taylor, M. (2011). *Perceptual Control Theory A Model for Understanding the Mechanisms and Phenomena of Control*. 1-12.

Pratto, F., Sidanius, J., Stallworth, L.M., & Malle, B.F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, 67, 741–763.

Quinn, N., & Mathews, H.F. (2016). Emotional arousal in the making of cultural selves. *Anthropological Theory*, 6(4), 359–389. <https://doi.org/10.1177/1463499616684051>

Rai, T.S., & Fiske, A.P. (2011). Moral Psychology Is Relationship Regulation: Moral Motives for Unity, Hierarchy, Equality, and Proportionality. *Psychological Review*, 118(1), 57-75. <https://doi.org/10.1037/a0021867>

Reddy, V. (2003). On being the object of attention: implications for self–other consciousness. *TRENDS in Cognitive Sciences*, 7(9), 397-402.

Reddy, V. (2008). Experiencing Others: a Second-Person Approach to Other-Awareness. In, U. Mueller, J.I.M Carpendale, N. Budwig & B. Sokol (Eds.), *Social Life and Social Knowledge: Toward a Process Account of Development*, pp. 123-144. Sussex: Psychology Press.

Reddy, V., & Mireault, G. (2015). Teasing and clowning in infancy. *Current Biology*, 25(1), R20-R23.

Richerson, P.J., & Boyd, R. (2005). *Not by Genes Alone: How Culture Transformed Human Evolution*. Chicago: University of Chicago Press.

Roberts, S., Henry, J.D., & Molenberghs, P. (2018). Immoral behaviour following brain damage: A review. *Journal of Neuropsychology*, : 1-25. <https://doi.org/10.1111/jnp.12155>

Robinson, D.T., Smith-Lovin, L., & Wisecup, A.K. (2007). Affect Control Theory. In, J.E. Stets & J.H. Turner (Eds.), *Handbook of the Sociology of Emotions*, pp. 179-202. New York: Springer.

Rochat, P., & Passos-Ferreira, C. (2009). From Imitation to Reciprocation and Mutual Recognition. In, J.A. Pineda (Ed.), *Mirror Neuron Systems: The Role of Mirroring Processes in Social Cognition*, pp. 191-212. New York: Springer. ISBN: 978-1607610540.

Rodger, H., Lao, J., & Caldara, R. (2018). Quantifying facial expression signal and intensity use during development. *Journal of Experimental Child Psychology*, 174, 41–59. <https://doi.org/10.1016/j.jecp.2018.05.005>

Rogers, E.M. (2003). *Diffusion of Innovations*. New York: Simon & Schuster.

Roos, P., Gelfand, M., Nau, D., & Lun, J. (2015). Societal threat and cultural variation in the strength of social norms: An evolutionary basis. *Organizational Behavior and Human Decision Processes*, 127, 14–23. <https://doi.org/10.1016/j.obhdp.2015.01.003>

- Rosch, E. (1978). Principles Of Categorization. In, E. Rosch & Lloyd, B.B. (Eds.), *Cognition and Categorization*, pp. 27-41. Hillsdale, NJ: Lawrence Erlbaum.
- Rothbaum, F., Weisz, J., Pott, M., Miyake, K., & Morelli, G. (2000). Attachment and Culture Security in the United States and Japan. *American Psychologist*, 55(10), 1093-1104.
- Rozin, P., Lowery, L., Haidt, J., & Sumio, I. (1999). The CAD Triad Hypothesis: A Mapping Between Three Moral Emotions (Contempt, Anger, Disgust) and Three Moral Codes (Community, Autonomy, Divinity). *Journal of Personality and Social Psychology*, 76(4), 574-586. <https://doi.org/10.1037/0022-3514.76.4.574>.
- Russell, A.M.T., & Fiske, S.T. (2008). It's all relative: Competition and status drive interpersonal perception. *European Journal of Social Psychology*, 38 (7), 1193-1201. <https://doi.org/10.1002/ejsp.539>.
- Russell, J.A. (2003). Core Affect and the Psychological Construction of Emotion. *Psychological Review*, 110(1), 145-172.
- Ryan, R.M., & Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 55(1), 68-78. <https://doi.org/10.1037/110003-066X.55.1.68>
- Saucier, G. (1992). Benchmarks: Integrating affective and interpersonal circles with the Big-Five personality factors. *Journal of Personality and Social Psychology*, 62, 1025-1035.
- Sauter, D.A., LeGuen, O., & Haun, D.B.M. (2011). Categorical perception of emotional facial expressions does not require lexical categories. *Emotion*, 11(6), 1479-1483. <https://doi.org/10.1037/a0025336>
- Savage-Rumbaugh, S. (1996). *Kanzi: The Ape at the Brink of the Human Mind*. New York: Wiley.
- Schachter, S., & Singer, J.E. (1962). Cognitive, social, and physiological determinants of emotional state, *Psychological Review*, 69, 379-99.
- Scheff, T.J. (1983). Looking Glass Selves: The Cooley/Goffman Conjecture. *Memorial Session for Erving Goffman, ASA, Atlanta*: 1- 17.
- Scheff, T.J. (1988). Shame and Conformity: The Deference-Emotion System. *American Sociological Review*, 53(3), 395- 406.
- Scheff, T.J. (1990). *Microsociology: Discourse, emotion, and social structure*. Chicago: University of Chicago Press.
- Scheff, T.J. (1997). *Emotions, the social bond, and human reality: part/whole analysis*. Cambridge, UK: Cambridge University Press.
- Scheff, T.J. (2007). War and Emotion: Hypermasculine Violence as a Social System.

- Scherer, K.R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 695–729. <https://doi.org/10.1177/0539018405058216>
- Schilbach, L., Timmermans, B., Reddy, V., Costall, A., Bente, G., Schlicht, T., & Vogeley, K. (2013). Toward a second-person neuroscience. *Behavioral and Brain Sciences*, 36, 393–462. <https://doi.org/10.1017/S0140525X12000660>
- Schlicht, T., Springer, A., Volz, K., Vosgerau, G., Schmidt-Daffy, M., Simon, D., & Zinck, A. (2009). Self as cultural construct? An argument for levels of self-representations. *Philosophical Psychology*, 22(6), 687–709.
- Schneider, A., & Heise, D.R. (1995). Simulating Symbolic Interaction. *Journal of Mathematical Sociology*, 20, 271–287.
- Schore, A.N. (2000). Attachment and the regulation of the right brain. *Attachment & Human Development*, 2(1), 23–47.
- Schore, A.N. (2003a). *Affect Dysregulation and Disorders of the Self*. New York: W.W. Norton & Company.
- Schore, A.N. (2003b). *Affect Regulation and the Repair of Self*. New York: W.W. Norton & Company.
- Schore, A.N. (2007). Effects of a Secure Attachment Relationship on Right Brain Development, Affect Regulation and Infant Mental Health. *Clinical Social Work Journal*.
- Schore, A.N. (2008). Attachment and the regulation of the right. *Attachment & Human Development*, 2(1), 23–47.
- Schore, A.N. (2009). Right-Brain Affect Regulation: An Essential Mechanism of Development, Trauma, Dissociation, and Psychotherapy. In D. Fosh, D. Siegel & M. Solomon (Eds.), *The Healing power of emotion: Affective neuroscience, development & clinical practice*, pp. 112–144. New York: W.W. Norton.
- Schore, A.N. (2018). The Right Brain Implicit Self: A Central Mechanism of the Psychotherapy Change Process. In J. Petrucelli (Ed.), *Knowing, Not-Knowing, and Sort of Knowing: Psychoanalysis and the Experience of Uncertainty*, American Psychological Association, pp. 177–202. New York: Routledge.
- Schore, J.R., & Shore, A.N. (2007). Modern Attachment Theory: The Central Role of Affect Regulation in Development and Treatment. *Clinical Social Work Journal*.
- Schröder, T., Rogers, K.B., Ike, S., Mell, J., & Scholl, W. (2013). Affective Meanings of Stereotyped Social Groups in Cross-Cultural Comparison. *Group Processes & Intergroup Relations*, 16(6), 717–733.
- Schwartz, S.H. (2012). An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2(1). <https://doi.org/10.9707/2307-0919.1116>



- Schwartz, S.H. (2016). A Theory of Cultural Value Orientations: Explication and Applications. *Comparative Sociology*, 5(2-3), 137-182.
- Searle, J.R. (2010). *Making the Social World: The Structure of Human Civilization*. New York: Oxford University Press.
- Selman, R.L. (1980). *The Growth of Interpersonal Understanding*. New York: Academic Press.
- Seppala, E., Rossomando, T., & Doty, J.R. (2013). Social Connection and Compassion: Important Predictors of Health and Well-Being. *Social Research: An International Quarterly*, Summer 2013, 80(2), 411-430. <https://doi.org/10.1353/sor.2013.0027>
- Shaffer, F., McCraty, R., & Zarr, C.L. (2014). A healthy heart is not a metronome: an integrative review of the heart's anatomy and heart rate variability. *Frontiers in Psychology*, 5(1040), 1-19. <https://doi.org/10.3389/fpsyg.2014.01040>
- Shah, P., Hall, R., Catmur, C., & Bird, G. (2016). Alexithymia, not autism, is associated with impaired interoception. *Cortex*, 81, 215-220.
- Sheikh, S., & Janoff-Bulman, R. (2010). The Shoulds and Should Nots of Moral Emotions: A Self-Regulatory Perspective on Shame and Guilt. *Personality and Social Psychology Bulletin*, 36, 213-224.
- Shweder, R. A., Much, N.C., Mahapatra, M., & Park, L. (1997). The Big Three of Morality (Autonomy, Community, Divinity) and the Big Three of Suffering. In, A. Brandt & P. Rozin, (Eds.), *Morality and Health*. New York: Routledge. ISBN: 978-0415915823
- Shweder, R.A., Goodnow, J., Hatano, G., LeVine, R.A., Markus, H., & Miller, P. (2006). The cultural psychology of development: One mind, many mentalities. In, W. Damon (Ed.), *Handbook of child development*, 6(1), 716-792. Chicago: University of Chicago Press.
- Siegel, D.J., & Hartzell, M. (2003). *Parenting from the Inside Out. How Deeper Self-Understanding Can Help You Raise Children Who Thrive*. New York: Penguin Group.
- Singelis, T.M., Triandis, H.C., Bhawuk, D.P.S., & Gelfand, M.J. (1995). Horizontal and Vertical Dimensions of Individualism and Collectivism: A Theoretical and Measurement Refinement. *Cross-Cultural Research*, 29(3), 240-275. <https://doi.org/10.1177/106939719502900302>
- Singer, T., Critchley, H.D., & Preuschoff, K. (2009). A common role of insula in feelings, empathy and uncertainty. *Trends in Cognitive Sciences*, 13(8), 334-440. <https://doi.org/10.1016/j.tics.2009.05.001>
- Sinn, J.S., & Hayes, M.W. (2016). Replacing the Moral Foundations: An Evolutionary-Coalitional Theory of Liberal-Conservative Differences. *Political Psychology*. <https://doi.org/10.1111/pops.12361>
- Skyrms, B. (1996). *Evolution of the social contract*. Cambridge, UK: Cambridge University Press.
- Smith-Lovin, L. (1990). Emotion as the Confirmation and Disconfirmation of Identity: An Affect

Control Model. In, T.D. Kemper (Ed.), *Research Agendas in the Sociology of Emotion*, pp. 238-270. Albany, NY: State University of New York Press.

Sober, E., & Wilson, D.S. (1998). *Unto Others: The Evolution and Psychology of Unselfish Behavior*. Cambridge, MA: Harvard University Press.

Solms, M. (2021). *The Hidden Spring: A Journey to the Source of Consciousness*. New York: WW Norton & Company. ISBN: 0393542017

Stanford, P.K. (2008). The difference between ice cream and Nazis: Moral externalization and the evolution of human cooperation. *Behavioral and Brain Sciences*, e95, 1-49. <http://doi.com/10.1017/S0140525X17001911>

Sterling, P. (2012). Allostasis: A model of predictive regulation. *Physiology & Behavior*, 106(1), 5-15. <https://doi.org/10.1016/j.physbeh.2011.06.004>

Stets, J.E., & Carter, M.J. (2006). The Moral Identity: A Principle Level Identity. In, K.A. McClelland & T.J. Fararo (Eds.), *Purpose, Meaning, and Action: Control Systems Theories in Sociology*, pp. 293-316. New York: Palgrave MacMillan. <https://doi.org/10.1007/978-1-137-10809-8>

Stets, J.E., & Turner, J.H. (2008). The Sociology of Emotions. In, M. Lewis, J.M. Haviland-Jones & L.F. Barrett (Eds.), *Handbook of Emotions*, 3rd edn., pp. 32-46. New York: Guilford Press.

Stevens, S.S. (1946). On the Theory of Scales of Measurement. *Science*, New Series, 103(2684), 677-680.

Stevens, S.S. (1975). *Psychophysics*. New York: Wiley.

Stobek, J., & Clore, G.L. (2008). Affective Arousal as Information: How Affective Arousal Influences Judgments, Learning, and Memory. *Social and Personality Psychology Compass*, 2(5): 1824-1843. <http://dx.doi.org/10.1111/j.1751-9004.2008.00138.x>

Suzuki, M., Gyoba, J., & Sakuta, Y. (2005). Multichannel NIRS analysis of brain activity during semantic differential rating of drawing stimuli containing different affective polarities. *Neuroscience Letters*, 375, 53-58. <https://doi.org/10.1016/j.neulet.2004.10.065>

Szyf, M, Champagne, J.A., & Meaney, M.J., *et al.* (2008). Epigenetic Programming of Phenotypic Variations in Reproductive Strategies in the Rat Through Maternal Care. *Journal of Neuroendocrinology*, 20, 795-801.

Szyf, M., & Meaney, M.J., *et al.* (2004). Epigenetic Programming by Maternal Behavior. *Nature*, 7(8), 847-54.

Tangney, J.P., Stuewig, J., & Mashek, D.J. (2007). Moral Emotions and Moral Behavior. *Annual Review of Psychology*, 58, 345-372. <https://doi.org/10.1146/annurev.psych.56.091103.070145>

Tenhouten, W.D. (1995). Dual Symbolic Classification and Primary Emotions: A Proposed Synthesis of Durkheim's Sociogenic and Plutchik's Psychoevolutionary Theories of Emotion.

*International Sociology*, 10(4), 427-445.

Tenhouten, W.D. (2007). *A General Theory of Emotions and Social Life*. New York: Routledge.

Teubner, G. (1989). How the Law Thinks: Toward a Constructivist Epistemology of Law. *Law and Society Review*, 23(5), 727-757.

Thamm, R.A. (1992). Social Structure and Emotion. *Sociological Perspectives*, 35(4), 189-222.

Thamm, R.A. (2004). Towards a Universal Power and Status Theory of Emotion. In, J.H. Turner (Ed.), *Advances in Group Processes*, pp. 189-222. Elsevier. [https://doi.org/10.1016/S0882-6145\(04\)21008-6](https://doi.org/10.1016/S0882-6145(04)21008-6)

Thamm, R.A. (2007). The Classification of Emotions. In, J.E. Stets & J.H. Turner (Eds.), *Handbook of the Sociology of Emotions*, pp. 11-37. New York: Springer.

Thayer, J.F., & Lane, R.D. (2000). A model of neurovisceral integration in emotion regulation and dysregulation. *Journal of Affective Disorders*, 61, 201-216. [https://doi.org/10.1016/S0165-0327\(00\)00338-4](https://doi.org/10.1016/S0165-0327(00)00338-4)

Thoits, P.A. (1989). The Sociology of Emotions. *Annual Review of Sociology*, 15, 317-342.

Thoits, P.A. (1994). Emotional Deviance. In, T.D. Kemper (Ed.), *Research Agendas in the Sociology of Emotion*, pp. 180-203. Albany: State University of New York Press.

Thompson, J.B. (1991). *Ideology and Modern Culture: Critical Social Theory in the Era of Mass Communication*. Palo Alto, CA: Stanford University Press.

Thompson, M., Ellis, R., & Wildavsky, A. (1990). *Cultural Theory*. Boulder, CO: Westview Press.

Thórisdóttir, H., & Jost, J. (2011). Motivated Closed-Mindedness Mediates the Effect of Threat on Political Conservatism. *Political Psychology*, 32(5), 785-811. <https://doi.org/10.1111/j.1467-9221.2011.00840.x>

Timmermans, S., & Tavory, I. (2012). Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis. *Sociological Theory*, 30(3), 167-186. <https://doi.org/10.1177/0735275112457914>

Tomasello, M. (1999). *The Cultural Origins of Human Cognition*. Cambridge, MA: Harvard University Press.

Tomasello, M. (2008). *Origins of Human Cooperation*. The Tanner Lectures on Human Values, Palo Alto, CA.

Tomasello, M. (2009). *Why We Cooperate*. Cambridge, MA: The MIT Press.

Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*, 28, 675-691. <https://doi.org/10.1017/S0140525X05000129>



- Tomkins, S.S. (1962/2008). *Affect Imagery Consciousness The Complete Edition (V. I-IV)*. New York: Springer Publishing Company.
- Tomkins, S.S. (1982). Affect theory. In, P. Ekman, W. Friesen, & P. Ellsworth (Eds.), *Emotions in the Human Face*, pp. 355–395. Cambridge: Cambridge University Press.
- Tooby, J., & Cosmides, L. (1990). The Past Explains the Present Emotional Adaptations and the Structure of Ancestral Environments. *Ethology and Sociobiology*, 11, 375-424.
- Tooby, J., & Cosmides, L. (2008). The Evolutionary Psychology of the Emotions and Their Relationship to Internal Regulatory Variables. In, Lewis M., Haviland-Jones J.M., & Barrett L.F., (Eds.). *Handbook of Emotions, Third Edition*, pp. 114–137. New York: Guilford Press.
- Tooby, J., Cosmides, L., & Barrett, H.C. (2005). Resolving the Debate on Innate Ideas: Learnability Constraints and the Evolved Interpenetration of Motivational and Conceptual Functions. In, P. Carruthers, S. Laurence, & S. Stich (Eds.), *The Innate Mind: Structure and Contents*, pp. 305-337. New York: Oxford University Press.
- Tops, M., Boksem, M.A.S., Luu, P., & Tucker, D.M. (2010). Brain substrates of behavioral programs associated with self-regulation. *Frontiers in Psychology*, 1(152), 1-14. <https://doi.org/10.3389/fpsyg.2010.00152>
- Tops, M., Boksem, M.A.S., Quirin, M., IJzerman, H., & Koole, S.L. (2014). Brain substrates of behavioral programs associated with self-regulation. *Frontiers in Psychology*, 5(429), 1-21. <https://doi.org/10.3389/fpsyg.2014.00429>
- Tracy, J.L., & Robins, R.W. (2007). Self-Conscious Emotions: Where Self and Emotion Meet. In, C. Sedikides & S. J. Spencer (Eds.), *Frontiers of social psychology. The self*, pp. 187-209. New York: Psychology Press.
- Trapnell, P.D., & Wiggins, J.S. (1990). Extension of the Interpersonal Adjective Scales to Include the Big Five Dimensions of Personality. *Journal of Personality and Social Psychology*, 59(4), 781-790. [https://doi.org/0022-3514/90/\\$00.75](https://doi.org/0022-3514/90/$00.75)
- Trevarthen, C. (1979). Communication and Cooperation in Early Infancy: a Description of Primary Intersubjectivity. In, M. Bullowa (Ed.), *Before Speech. The Beginning of Interpersonal Communication*, pp. 321-348. Cambridge: Cambridge University Press.
- Trevarthen, C. (2011). What Is It Like To Be a Person Who Knows Nothing? Defining the Active Intersubjective Mind of a Newborn Human Being. *Infant and Child Development, Special Issue: The Intersubjective Newborn*, 20(1), 119-135.
- Trevarthen, C., & Aitken, K.J. (1994). Brain development, infant communication, and empathy disorders: intrinsic factors in child mental health. *Development and Psychopathology*, 6, 599–635.
- Trevarthen, C., & Aitken, K.J. (2001). Infant Intersubjectivity: Research, Theory, and Clinical Applications. *J. Child Psychol. Psychiat.*, 42(1), 3–48.

- Trevarthen, C., Aitken, K.J., Vandekerckhove, M., Delafield-Butt, J., & Nagy, E. (2006). Collaborative Regulations of Vitality in Early Childhood: Stress in Intimate Relationships and Postnatal Psychopathology. In, D. Cicchetti & D.J. Cohen (Eds.), *Developmental Psychopathology: Volume Two: Developmental Neuroscience, Second Edition*, pp. 65-126. New York: John Wiley & Sons. <https://doi.org/10.1002/9780470939390.ch2>
- Trevarthen, C., & Delafield-Butt, J. (2013). Autism as a developmental disorder in intentional movement and affective engagement. *Frontiers in Neuroscience*, 7(49), 1-16. <https://doi.org/10.3389/fnint.2013.00049>
- Triandis, H.C., & Gelfand, M.J. (1998). Converging Measurement of Horizontal and Vertical Individualism and Collectivism. *Journal of Personality and Social Psychology*, 74(1), 118-128.
- Tritt, S.M., Inzlicht, M., & Peterson, J.B. (2013). Preliminary Support for a Generalized Arousal Model of Political Conservatism. *PLoS ONE*, 8(12), e83333. <https://doi.org/10.1371/journal.pone.0083333>
- Tritt, S.M., Peterson, J.B., Page-Gould, E., & Inzlicht, M. (2016). Ideological reactivity: Political conservatism and brain responsivity to emotional and neutral stimuli. *Emotion*, 16(8), 1172-1185. <https://doi.org/10.1037/emo0000150>
- Trivers, R.L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35-57. <https://doi.org/10.1086/406755>
- Turner, J.H. (2007). Psychoanalytic Sociological Theories and Emotions. In, J.E. Stets & J.H. Turner (Eds.), *Handbook of the Sociology of Emotions*, pp. 276-294. New York: Springer.
- Turner, J.H., & Stets, J.E. (2006). Sociological Theories of Human Emotions. *Annual Review Sociology*, 32, 25-52.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131.
- Uddin, L.Q., Davies, M.S., Scott, A.A., Zaidel, E., Bookheimer, S.Y., Iacoboni, M., & Dapretto, M. (2008). Neural Basis of Self and Other Representation in Autism: An fMRI Study of Self-Face Recognition. *PLoS One*, 3(10), e3526. <https://doi.org/10.1371/journal.pone.0003526>
- Uddin, L.Q., & Menon, V. (2009). The anterior insula in autism: under-connected and under-examined. *Neuroscience & Biobehavioral Reviews*, 33, 1198-1203. <https://doi.org/10.1016/j.neubiorev.2009.06.002>
- Varela, F.J., Thompson, E., & Rosch, E. (1987). *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, MA: The MIT Press.
- Vaske, J., Galyean, K., & Cullen, F.T. (2011). Toward a biosocial theory of offender rehabilitation: Why does cognitive-behavioral therapy work? *Journal of Criminal Justice*, 39, 90-102. <https://doi.org/10.1016/j.jcrimjus.2010.12.006>
- Verweij, M. (2007). Towards a Theory of Constrained Relativism: Comparing and Combining the

Work of Pierre Bourdieu, Mary Douglas and Michael Thompson, and Alan Fiske. *Sociological Research Online*, 12(6), 1-13. <https://doi.org/10.5153/sro.1595>

Verweij, M., Luan, S., & Nowacki, M. (2011). How to test cultural theory: Suggestions for future research. *PS: Political Science and Politics*, 44(4), 745-748. <https://doi.org/10.1017/S1049096511001399>

Verweij, M., Van Egmond, M., Kühnen, U., Luan, S., Nye, S., & Schoop, M.A. (2014). I disagree, therefore I am: how to test and strengthen cultural versatility. *Innovation: The European Journal of Social Science Research*, 27(2), 83-98. <https://doi.org/10.1080/13511610.2014.904743>

Verweij, M., & Senior, T. (2015). Social theory and the cognitive-emotional brain. *Behavioral and Brain Sciences*, 38, E88. <https://doi.org/10.1017/S0140525X14001034>

Verweij, M., Senior, T.J., Dominguez, J.F., & Turner, R. (2015). Emotion, rationality, and decision-making: how to link affective and social neuroscience with social theory. *Frontiers in Neuroscience*, 9(332), 745-748. <https://doi.org/10.3389/fnins.2015.00332>

Vygotsky, L. (1978). *Mind In Society*. Cambridge, MA: Harvard University Press.

Vygotsky, L. (1986). *Thought and Language*. Cambridge, MA: The MIT Press.

Wade, T.D. (1979). Status And Hierarchy In Nonhuman Primate Societies. In, P.P.G. Bateson *et al.* (Eds.), *Social Behavior*, pp. 109-134. New York: Plenum Press.

Waring, T.M., Kline, M.A., Brooks, J.S., Goff, S.H., Gowdy, J., Janssen, M.A., Smaldino, P.E., & Jacquet, J. (2015). A multilevel evolutionary framework for sustainability analysis. *Ecology and Society*, 20(2), 34. <https://doi.org/10.5751/ES-07634-200234>

Watzlawick, P., Bavelas, J., & Jackson, D.D. (1967/2011). *Pragmatics of Human Communication: A Study of Interactional Patterns, Pathologies and Paradoxes*. New York: W.W. Norton & Company.

Weber, M. (1946). *From Max Weber: Essays in Sociology*. Translated and edited by H.H. Gerth & C.W. Mills. New York: Oxford University Press.

Weisstein, E.W. *Octant*. MathWorld. <https://mathworld.wolfram.com/Octant.html>

Wellman, H.M., & Peterson, C.C. (2013). Theory of mind, development, and deafness. In, S. Baron-Cohen, H. Tager-Flusberg & M.V. Lombardo (Eds.), *Understanding Other Minds: Perspectives from Developmental Social Neuroscience*, pp. 51-71. Oxford, UK: Oxford University Press. ISBN: 978-0-19-969297-2.

Wiggins, B., & Heise, D.R. (1988). Expectations, Intentions and Behavior: Some Tests of Affect Control Theory. In, Smith-Lovin, L., & Heise, D.R. (Eds.), *Analyzing Social Interaction: Advances in Affect Control Theory*, pp. 153-169. New York: Routledge.

Wiggins, J.S. (1991). *Manual for the Interpersonal Adjective Scales*. Odessa, FL: Psychological Assessment Resources.

- Wikipedia. Accessed October 18, 2018. [https://en.wikipedia.org/wiki/Allegory\\_of\\_the\\_Cave](https://en.wikipedia.org/wiki/Allegory_of_the_Cave)
- Wilber, K. (2000a). *A Theory of Everything*. Boston, MA: Shambhala.
- Wilber, K. (2000b). *Integral Psychology: Consciousness, Spirit, Psychology, Therapy*. Boston, MA: Shambhala.
- Wilber, K. (2000c). *No Boundary: Eastern and Western Approaches to Personal Growth*. Boston, MA: Shambhala.
- Wiley, N. (1988). The Micro-Macro Problem in Social Theory. *Sociological Theory*, 6(2), 254-261.
- Wiley, N. (1995). *The Semiotic Self*. Chicago: University of Chicago Press.
- Wiley, N. (2006a). Peirce and the Founding of American Sociology. *Journal for Classical Sociology*, 6(1), 23-50.
- Wiley, N. (2006b). Pragmatism and the Dialogical Self. *International Journal for Dialogical Science*, 1(1), 5-21.
- Wilson, E.O. (1999). *Consilience: The Unity of Knowledge*. New York: Vintage.
- Wilson, D.S. (2015). *Does Altruism Exist?* New Haven: Yale University Press.
- Wilson, D.S. (2016). Intentional Cultural Change. *Current Opinion in Psychology*, 8, 190-193. <https://doi.org/10.1016/j.copsyc.2015.12.012>
- Wilson, D.S., Hayes, S.T., Biglan, A., & Embry, D.D. (2014). Evolving the future: Toward a science of intentional change. *Behavioral and Brain Sciences*, 37, 395-460. <https://doi.org/10.1017/S0140525X13001593>
- Wilson, D.S., Ostrom, E., & Cox, M.E. (2013). Generalizing the core design principles for the efficacy of groups. *Journal of Economic Behavioral Organization*. <https://doi.org/10.1016/j.jebo.2012.12.010>
- Wilson-Mendenhall, C.D., Barrett, L.F., Simmons, W.K., & Barsalou, L.W. (2011). Grounding emotion in situated conceptualization. *Neuropsychologia*, 49, 1105-1127. <https://doi.org/doi:10.1016/j.neuropsychologia.2010.12.032>
- Winkielman, P., & Cacioppo, J.T. (2001). Mind at Ease Puts a Smile on the Face: Psychophysiological Evidence That Processing Facilitation Elicits Positive Affect. *Journal of Personality and Social Psychology*, 81(6), 989-1000. <https://doi.org/10.1037/0022-3514.81.6..989>
- Wojciszke, B. (1994). Multiple Meanings of Behavior: Construing Actions in Terms of Competence or Morality. *Journal of Personality and Social Psychology*, 67(2), 222-232.
- Xiao, Y.J., Coppin, G., & Van Bavel, J.J. (2016). Clarifying the Role of Perception in Intergroup Relations: Origins of Bias, Components of Perception, and Practical Implications. *Psychological*

*Inquiry*, 27(4), 358-366. <https://doi.org/10.1080/1047840X.2016.1237822>

Zlatev, J. (2007). Intersubjectivity, mimetic schemas and the emergence of language. *Intellectica*, 46-47(2-3), 123-152.